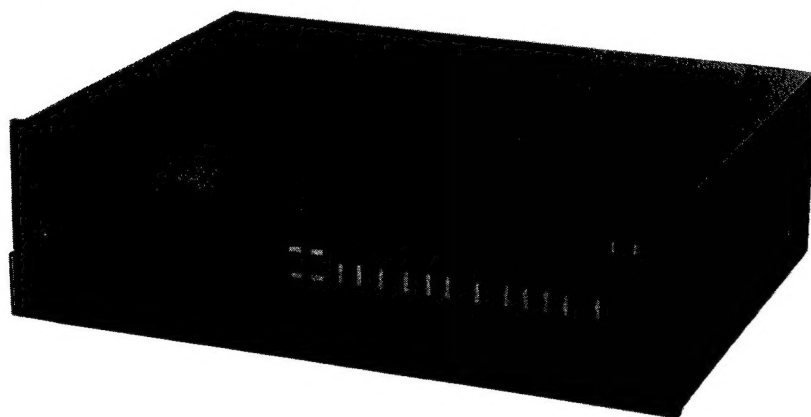


Service Manual

Cassette Deck
RS-M95
 (Black Face)

Quartz Phase Locked Direct-Drive Cassette Deck with
 Microprocessor Tape Tension Control, New 3 Head System



Professional Series

This is the Service Manual for the following areas.

- Ⓓ For All European areas except United Kingdom.
- Ⓑ For United Kingdom.
- Ⓐ For Australia.

RS-M85 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Inputs:	MIC; sensitivity 0.25mV, input impedance 10k Ω applicable microphone impedance 400 Ω —10k Ω
Tape speed:	4.8cm/s		
Wow and flutter:	0.03% (WRMS), $\pm 0.09\%$ (DIN)	Outputs:	LINE; sensitivity 60mV, input impedance 60k Ω LINE; output level 650mV, output impedance 6k Ω or less, load impedance 20k Ω over
Frequency response: Metal tape;	20—20,000Hz 20—20,000Hz (DIN) 20—20,000Hz ± 3 dB		HEADPHONE; output level 88mV, load impedance 8 Ω
(0VU)	20—13,000Hz ± 3 dB	Bias frequency:	85kHz
CrO ₂ /Fe-Cr tape;	20—20,000Hz 20—19,000Hz (DIN) 20—19,000Hz ± 3 dB	Motor:	2-motor system Capstan; 1-quartz control phase-locked DC brushless direct-drive motor
Normal tape;	20—18,000Hz 20—17,000Hz (DIN) 20—17,000Hz ± 3 dB		Reel table; 1-DC coreless motor
Signal-to-noise ratio: Dolby [®] NR in; 70dB (above 5kHz)		Heads:	3-head system 2-HPF heads for rec/playback (combination type) 1-sensist/ferrite double-gap head for erasure
Dolby NR out; 60dB (signal level=max. recording level, Fe-Cr/CrO ₂ type tape)		Power requirements:	AC; 110/125/220/240V, 50-60Hz
Fast forward and rewind time: Approx. 80 seconds with C-60 cassette tape		Power consumption:	46W (50W for England and Australia)
		Dimensions:	45cm(W) \times 14.2cm(H) \times 34.8cm(D)
		Weight:	12kg

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.
 P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

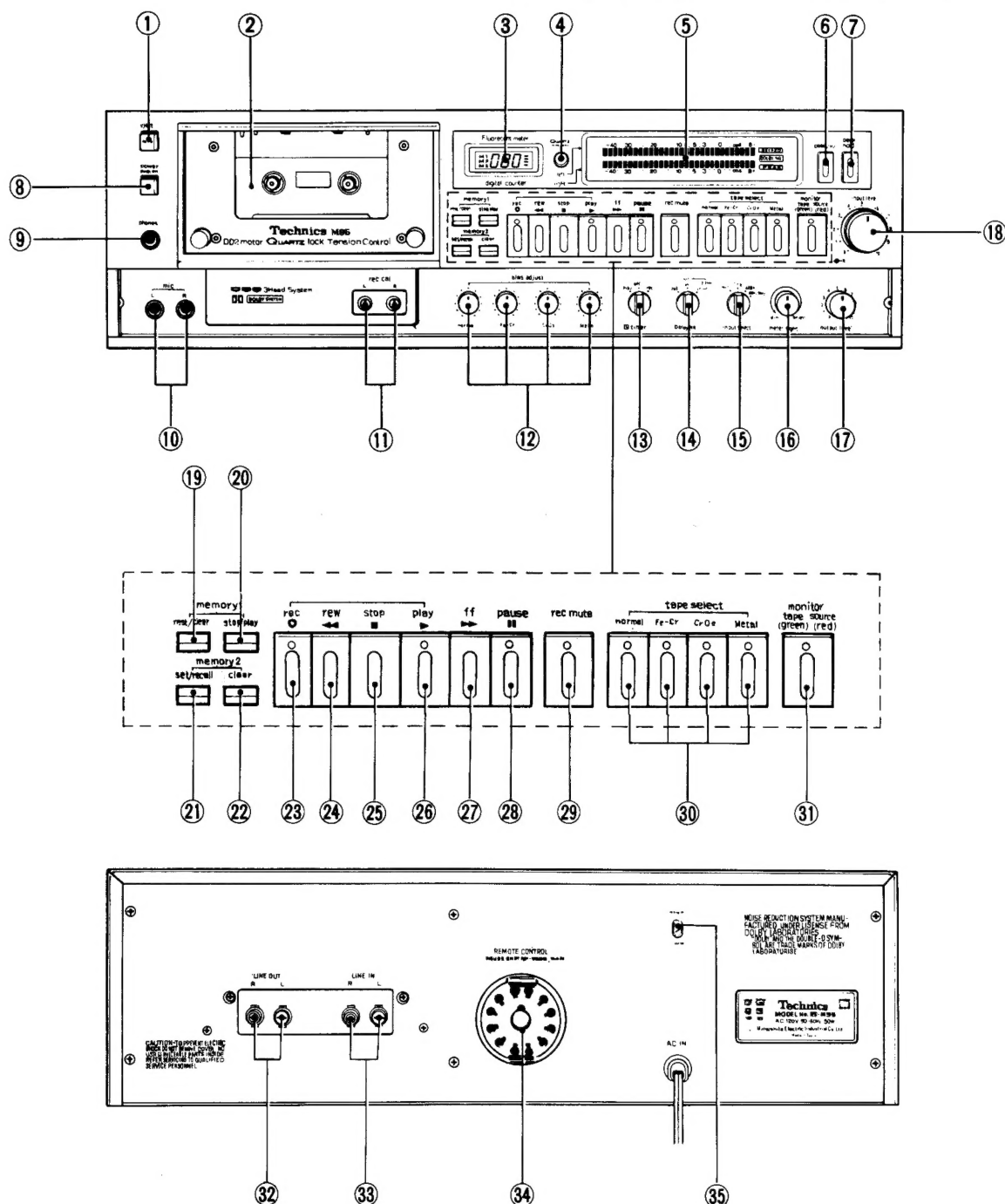


Fig. 1

- | | | |
|----------------------------------|--|---|
| ① Eject button | ⑬ Timer operation selector | ⑳ Stop button |
| ② Cassette compartment door | ⑭ Dolby noise-reduction selector | ㉑ Playback button and playback-indication lamp |
| ③ Digital tape counter | ⑮ Input selector | ㉒ Fast forward button |
| ④ Quartz strobo | ⑯ Meter-brightness control | ㉓ Pause button and pause-indication lamp |
| ⑤ Fluorescent level meter | ⑰ Output-level control | ㉔ Record-muting button and muting-indication lamp |
| ⑥ Peak/VU selector | ⑱ Input-level controls | ㉕ Tape selectors and tape-indication lamps |
| ⑦ Peak-hold selector | ㉑ Memory-1 reset/clear button | ㉖ Monitor selector and LED monitor indicator |
| ⑧ Power switch | ㉒ Memory-1 stop/play button | ㉗ Line-output connection jacks |
| ⑨ Headphones connection jack | ㉓ Memory-2 set/recall button | ㉘ Line-input connection jacks |
| ⑩ Microphone connection jacks | ㉔ Memory-2 clear button | ㉙ Remote-control connector |
| ⑪ Recording-calibration controls | ㉕ Record button and record-indication lamp | ㉚ Voltage selector |
| ⑫ Bias controls | ㉖ Rewind button | |

DISASSEMBLY INSTRUCTIONS

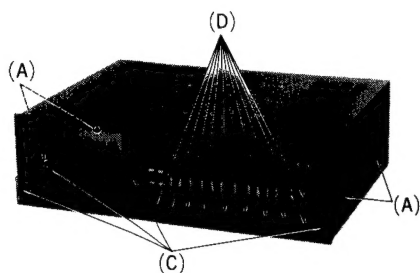


Fig. 2

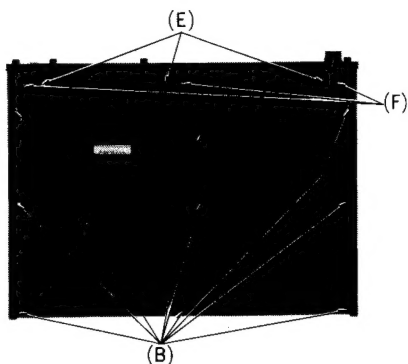


Fig. 3

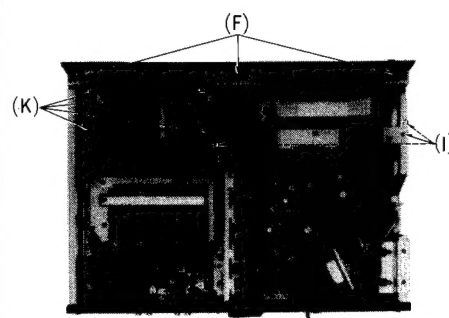


Fig. 4

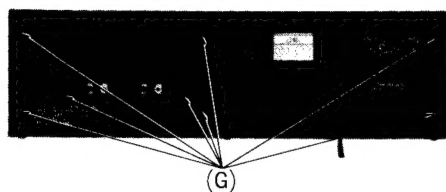


Fig. 5

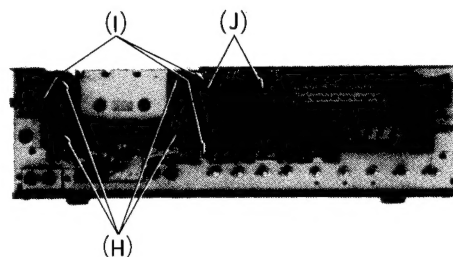


Fig. 6

Procedure	To remove — .	Remove — .	Shown in fig. — .
1	Case cover	• 4 black screws(A)	2
2	Bottom cover	• 9 red screws(B)	3
3	Front panel	• 4 screws(C) • 10 control knobs(D) • 3 screws(E) • 6 black screws(F)	2 2 3 3, 4
4	Back cover	• 8 black screws(G)	5
5	Cassette lid	• 4 black screws(H)	6
6	Mechanism	• 6 screws(I)	4, 6
7	Tape counter	• 2 counter holders(J)	6
8	FL level meter	• 4 screws(K)	4

CIRCUIT BOARDS LOCATION

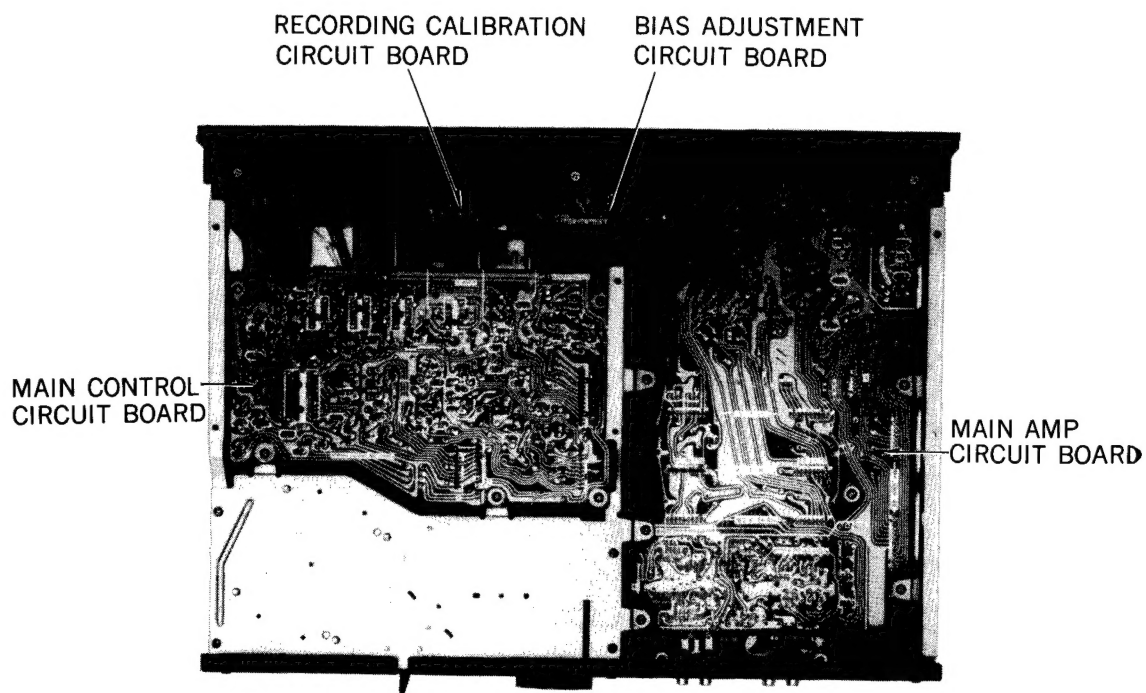
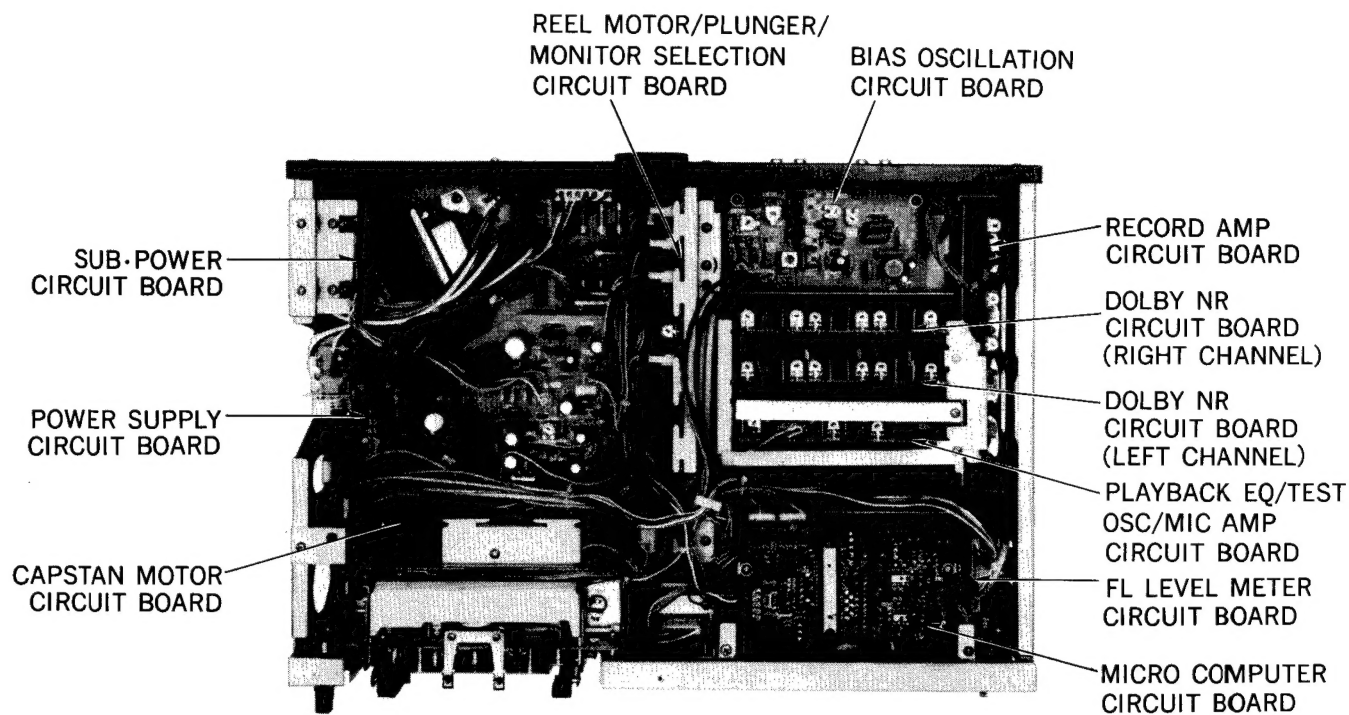
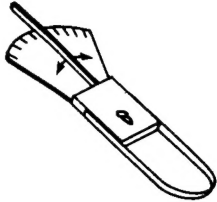
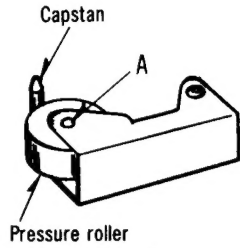
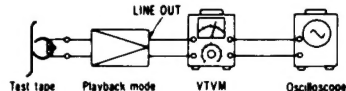
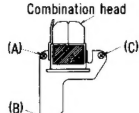
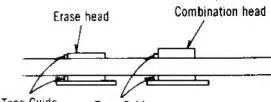
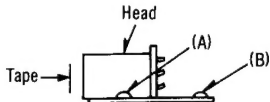


Fig. 7

MEASUREMENT AND ADJUSTMENT METHODS

NOTE:

1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$).
4. Tape selector: Normal.
5. Monitor selector: Tape.
6. Bias adjustment control: Center.
7. Input level control: Maximum.
8. Output level control: Maximum.
9. Dolby NR selector: Out.
10. Input selector: Line.
11. Meter light control: Bright.
12. Peak/VU selector: Peak.
13. Peak hold selector: OFF.
14. Timer selector: OFF.

ITEM	MEASUREMENT & ADJUSTMENT
A Power supply adjustment	<p>+20V adjustment</p> <ol style="list-style-type: none"> Connect voltmeter to the test point [20V T.P] on the power circuit board and read voltage. <p>Standard value: $+20 \pm 0.5\text{V}$</p> <ol style="list-style-type: none"> If measured value is not in standard, adjust VR801 as shown in fig. 37.
B Pressure of pressure roller Condition: * Playback mode Equipment: * Tension gauge (max. 500 gr) 	<ol style="list-style-type: none"> Place UNIT into playback mode. Hook tension gauge to pressure roller shaft top (A), and pull gauge in direction opposite to pressure of pressure roller against capstan (See fig. 8). Read pressure indicated on gauge immediately when pressure roller moves away from capstan and stops rotating. <p>Standard value: $400 \pm 30\text{ gr}$</p>  <p>Fig. 8</p>
C Takeup tension Condition: * Playback mode Equipment: * Cassette torque meter (QZZSRKCT)	<ol style="list-style-type: none"> Mount cassette torque meter on UNIT. Place UNIT into playback mode. Measure the takeup torque within 15 seconds after starting the playback mode. <p>Standard value: $40 \pm 2\text{ gr-cm}$</p> <ol style="list-style-type: none"> If measured value is not within standard, adjust VR601.
D Combination head adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape... QZZCRD (Tape path viewer with mirror) * Test tape... QZZCFM (azimuth)	<ol style="list-style-type: none"> Test equipment connection is shown in fig. 9. Playback the test tape (QZZCRD). In this condition, adjust screws (A) and (B) shown in fig. 10 and 12 so that the tape may not get curled or malformed by tape guides of the erase head and the combination head (fig. 11 shows correct condition). <p>Note: For the combination head carefully adjust the height so that the head surface contacts the tape in parallel shown in fig. 12.</p> <ol style="list-style-type: none"> Playback the azimuth tape (QZZCFM 8 kHz). Adjust the combination head angle adjustment screw (C) in fig. 10 so that the output level at LINE OUT becomes maximum. Measure both channels, and adjust levels for equal output. After adjustment, lock the head adjustment screws with lacquer.  <p>Fig. 9</p>  <p>Fig. 10</p>  <p>Fig. 11</p>  <p>Fig. 12</p>

ITEM	MEASUREMENT & ADJUSTMENT
<p>E Tape speed</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode <p>Equipment:</p> <ul style="list-style-type: none"> * Digital electronic counter * Test tape ... QZZCWAT 	<p>Tape speed accuracy</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 13. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ <p style="text-align: center;">f = measured value</p> <ol style="list-style-type: none"> 5. Take measurement at middle section of tape. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Standard value: $\pm 0.4\%$ </div> <p>Tape speed fluctuation</p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation} = \frac{f_2 - f_1}{3,000} \times 100 (\%)$ <p style="text-align: center;">f_1 = maximum value, f_2 = minimum value</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Standard value: Less than 0.3% </div>
<p>F Wow and flutter</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode <p>Equipment:</p> <ul style="list-style-type: none"> * Wow meter * Test tape ... QZZCWAT 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 14. 2. Use wow test tape (3,000Hz) and measure its playback signal on wow meter. 3. Wow and flutter is expressed in percentage and that measurement can be weighted by JIS network (WRMS). 4. Measure at middle section of test tape. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Standard value: 0.04% (WRMS) </div>
<p>G Capstan motor circuit adjustment</p> <p>Condition:</p> <ul style="list-style-type: none"> * Playback mode <p>Equipment:</p> <ul style="list-style-type: none"> * DC voltmeter * Oscilloscope 	<p>A. Standard DC power supply voltage adjustment</p> <ol style="list-style-type: none"> 1. Measure the DC voltage between central point of VR703 and ⑥ terminal of IC702 as shown in fig. 15. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Standard voltage: $0 \pm 0.05 \text{ V}$ </div> <p>2. If measured voltage is not within standard, adjust VR703.</p> <p>B. Phase lock point adjustment</p> <ol style="list-style-type: none"> 1. Measure the DC voltage between ④ terminal of IC702 and ground as shown below. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Standard voltage: $5.2 \pm 0.1 \text{ V}$ </div> <p>2. If measured voltage is not within standard, adjust VR702.</p> <p>C. Position detecting signal output level adjustment</p> <ol style="list-style-type: none"> 1. Connect oscilloscope to test point (T.P. [P.V]). 2. Measure the peak-to-peak voltage of position detection signal of test point with the oscilloscope. 3. If the measured signal voltage is markedly different from the voltage shown below, make the necessary adjustment with VR701.

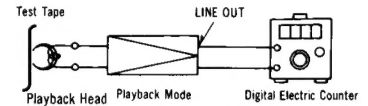


Fig. 13

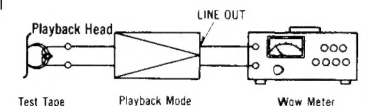


Fig. 14

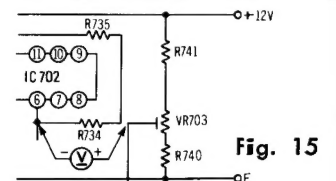


Fig. 15

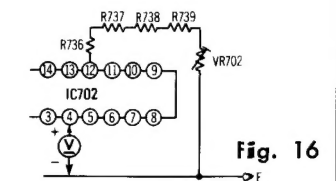


Fig. 16

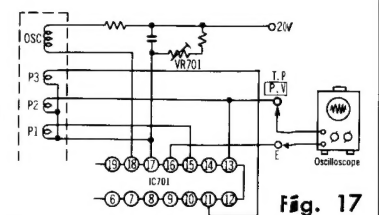


Fig. 17

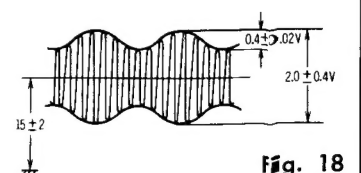
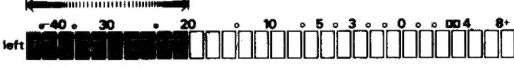
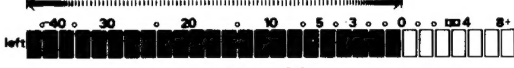
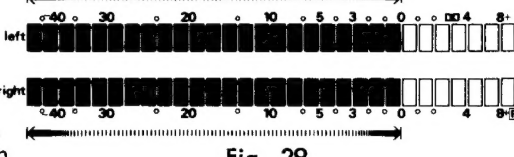
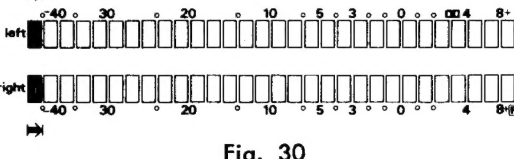
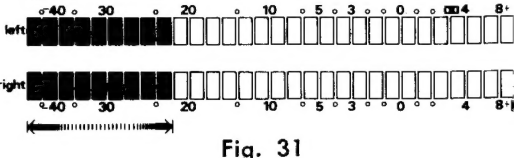
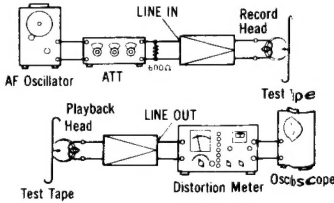


Fig. 18

ITEM	MEASUREMENT & ADJUSTMENT
<p>H Playback frequency response</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode • Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM 	<p>1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape (QZZCFM) instead of head azimuth tape (See fig. 9).</p> <p>2. Place UNIT into playback mode.</p> <p>3. Playback frequency response test tape (QZZCFM).</p> <p>4. Measure output level at 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz and compare output level with standard frequency 315Hz at LINE OUT.</p> <p>5. Make measurement for both channels.</p> <p>6. Make sure that the measured value is within the range specified in the frequency response chart.</p> <p>7. If measured value is not in standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 35 on page 9).</p> <div data-bbox="893 322 1436 515"> <p>Playback frequency response chart</p> <p>Fig. 19</p> </div>
<p>I Playback gain</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode • Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM 	<p>1. Test equipment connection is shown in fig. 9.</p> <p>2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at LINE OUT jack.</p> <p>3. Make measurement for both channels.</p> <div data-bbox="526 806 877 862"> <p>Standard value: $0.65 \pm 0.05 V$</p> </div> <p>Adjustment</p> <p>1. If measured value is not standard, adjust VR101 (L-CH), VR102 (R-CH) (See fig. 37 on page 11).</p> <p>2. After adjustment, check "Playback frequency response" again.</p>
<p>J Playback S/N ratio</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode • Output level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM • Empty cassette 	<p>1. Test equipment connection is shown in fig. 9.</p> <p>2. Playback standard recording level test tape (QZZCFM 315Hz) and read output level on VTVM. Refer to "Playback gain adjustment".</p> <p>3. Place empty cassette (which has been cut) and playback again.</p> <p>4. Measure noise level at this time using VTVM, and determine ratio of this level to test tape output signal voltage (315Hz).</p> <div data-bbox="526 1164 941 1220"> <p>Standard value: Greater than 47dB</p> </div>
<p>K Bias leak</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode • Input level control ... MAX <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope 	<p>1. Test equipment connection is shown in fig. 20.</p> <p>2. Place UNIT into record mode.</p> <p>3. Adjust trap coils L851 (L-CH), L852 (R-CH) so that measured value becomes minimum (See adjustment parts location on page 11).</p> <p>4. Make adjustment for both channels.</p> <div data-bbox="1085 1276 1436 1478"> <p>Fig. 20</p> </div>
<p>L Record bias amplifier circuit</p>	<p>Transistor base current waveform adjustment</p> <p>A. Lower part of wave form</p> <ol style="list-style-type: none"> 1. Set the tape selector to the "Metal" position. 2. Press the record and pause buttons. 3. Connect the oscilloscope to 1 (for Q853) and 2 (for Q854). 4. Observe the wave form on the oscilloscope, and adjust VR851 (for Q853) and VR852 (for Q854) so that the lower part of the wave form is as shown in fig. 22. <p>Note: The wave form can be improved by turning VR851 and VR852 counterclockwise. Stop turning VR851 and VR852 immediately after elimination of deformed part of the wave.</p> <div data-bbox="893 1523 1436 1971"> <p>Fig. 21</p> <p>Fig. 22</p> <p>If the wave is deformed as shown here, adjust VR851 and VR852</p> </div>

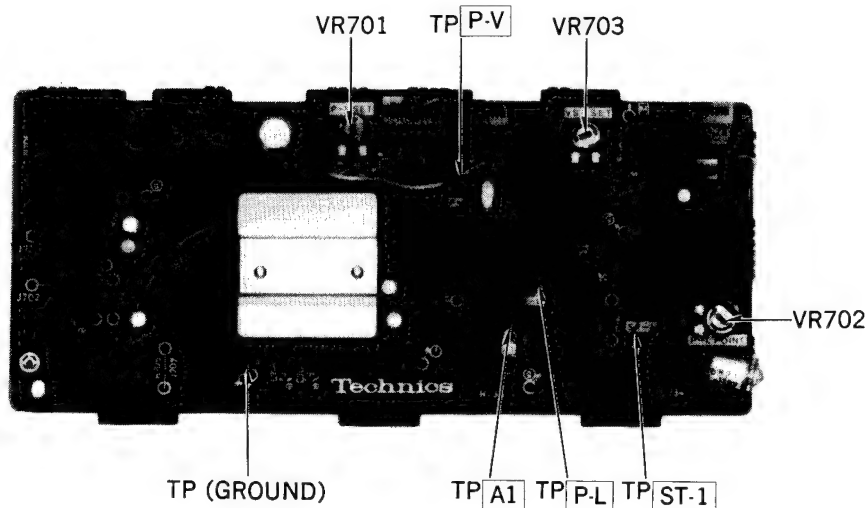
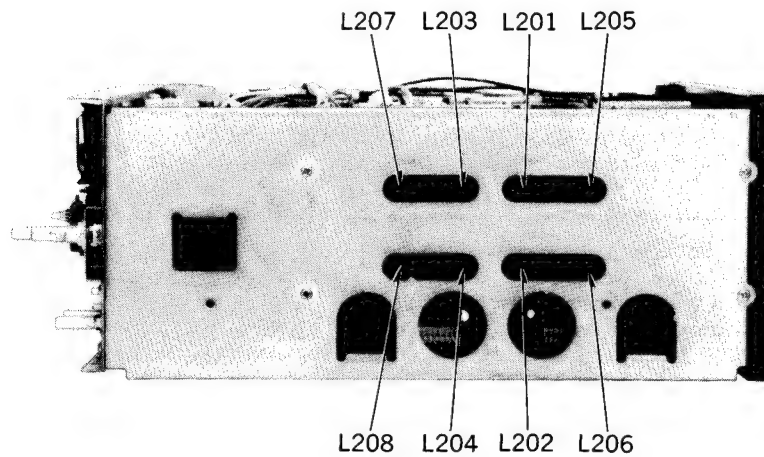
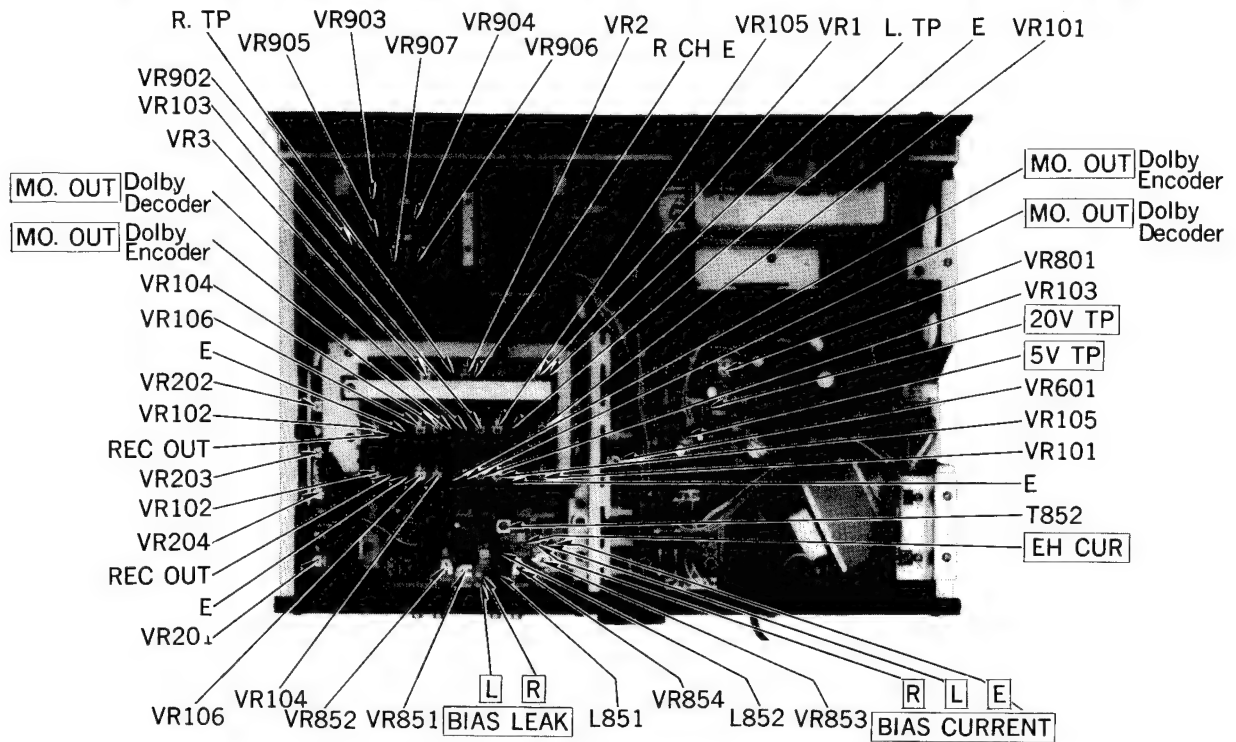
ITEM	MEASUREMENT & ADJUSTMENT
	<p>B. Upper part of wave form</p> <p>5. After adjusting the lower part of the wave form, observe the upper part of the wave.</p> <p>6. If the wave form is as symmetrically distorted as shown in fig. 23, adjust T852.</p> <p>Note: If the wave form is observed as in (a), turn T852 clockwise. If the wave form is observed as in (b), turn T852 counterclockwise. In each case to achieve symmetrical pattern as shown in (c).</p> <div data-bbox="973 324 1436 526"> <p style="text-align: center;">Fig. 23</p> </div>
<p>M Bias current</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Bias adjustment control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 24. 2. Press the record and pause buttons. Set the tape selector to normal position. 3. Read voltage on VTVM and calculate bias current by following formula. <div data-bbox="606 761 1021 828"> $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ </div> <div data-bbox="574 840 933 884" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 1.0 ± 0.3 mA </div> <div data-bbox="1133 694 1484 840"> <p style="text-align: center;">Fig. 24</p> </div> <ol style="list-style-type: none"> 4. Adjust VR853 (L-CH) and VR854 (R-CH) (See adjustment parts location on page 11). 5. Then changing the tape selector to Fe-Cr position measure the bias current. <div data-bbox="574 963 933 1008" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 1.1 ± 0.3 mA </div> <ol style="list-style-type: none"> 6. If measured value is not in standard, adjust VR202. 7. Change the tape selector to CrO₂ position, measure the bias current. <div data-bbox="574 1086 933 1131" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 1.5 ± 0.4 mA </div> <ol style="list-style-type: none"> 8. If measured value is not in standard, adjust VR203. 9. Change the tape selector to the "Metal" position, measure the bias current. <div data-bbox="574 1209 933 1254" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 2.2 ± 0.6 mA </div> 10. If measured value is not in standard, adjust VR204.
<p>N Erase current</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Bias adjustment control ... Center <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * Oscilloscope 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 25. 2. Set the tape selector to the "Metal" position. 3. Press the record and pause buttons. 4. Measure voltage on VTVM. 5. Determine erase current with the following formula. <div data-bbox="590 1456 1101 1523"> $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R861}}{1 (\Omega)}$ </div> <div data-bbox="558 1534 1061 1590" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 95 \pm 5 mA (Metal position) </div> <div data-bbox="1117 1388 1468 1556"> <p style="text-align: center;">Fig. 25</p> </div> <ol style="list-style-type: none"> 6. If measured value is not within standard, adjust VR201.
<p>Overall gain</p> <p>Condition:</p> <ul style="list-style-type: none"> * Standard input level: MIC -72 ± 3 dB LINE IN ... -24 ± 3 dB <p>Equipment:</p> <ul style="list-style-type: none"> * AF oscillator * VTVM * ATT * Oscilloscope * Test tape (reference blank tape) ... QZZCRA for Normal 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 26. 2. Set the tape selector to "Normal" position. 3. Supply 1 kHz signal (-24 dB) from AF oscillator, through ATT, to LINE IN. 4. Adjust ATT until source monitor level at LINE OUT becomes 0.65 V. 5. Using test tape, make recording. 6. Then, measure the tape monitor output level at LINE OUT on VTVM. <div data-bbox="558 1904 917 1948" style="border: 1px solid black; padding: 2px; text-align: center;"> Standard value: 0.65 ± 0.05 V </div> <div data-bbox="1117 1691 1468 1948"> <p style="text-align: center;">Fig. 26</p> </div> <ol style="list-style-type: none"> 7. If measured value is not within standard, adjust VR102.

ITEM	MEASUREMENT & ADJUSTMENT
<p>P Fluorescent level meter</p> <p>Condition:</p> <ul style="list-style-type: none"> * Record mode * Peak/VU selector ... Peak position <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT 	<ol style="list-style-type: none"> Test equipment connection is shown in fig. 26. Set the monitor switch to the "source" position. Supply 1 kHz signal (-24 ± 3 dB) to the LINE IN jack. Adjust the ATT so that the source monitor output level of left channel becomes 0.65 V. <ul style="list-style-type: none"> * The attenuation of ATT at that point is the standard input level. <p>A. Adjustment of "-20 dB" indication (Left channel indication)</p> <ol style="list-style-type: none"> Attenuate ATT by 20 dB from the standard input level. (Then, the source monitor output level is 0.065 V.) Turn VR903 clockwise completely. Next, slowly turn VR903 counter-clockwise until the "-18 dB" indication on the meter goes out.  <p>Fig. 27</p> <p>B. Adjustment of "0 dB" indication (Left channel indication)</p> <ol style="list-style-type: none"> Set the ATT to the standard level. (Then, the source monitor output level is 0.65 V.) Turn VR907 counterclockwise completely. Slowly turn VR907 clockwise until the "+1 dB" indication on the meter goes out.  <p>Fig. 28</p> <p>C. Adjustment of balance between right and left channels.</p> <ol style="list-style-type: none"> After the adjustment in B, adjust VR902 (for right channel), if necessary, so that the right channel indication matches the left channel indication.  <p>Fig. 29</p> <p>D. Adjustment of "-42 dB" indication</p> <ul style="list-style-type: none"> * "-42 dB" indication lights up with power supply turned on. <ol style="list-style-type: none"> Attenuate the ATT by 42 dB from the standard input level. (Then, the source monitor output level is 0.0052 V.) Fully turn VR904 (for L-CH) and VR905 (for R-CH) clockwise. Slowly turn VR904 and VR905 counterclockwise until the "-40 dB" indication on the meter goes out.  <p>Fig. 30</p> <p>E. Adjustment of "-22 dB" indication</p> <ol style="list-style-type: none"> Attenuate the ATT by 22 dB from the standard input level. (Then, the source monitor output level is 0.052 V.) Turn VR906 counterclockwise completely. Slowly turn VR906 clockwise until the "-20 dB" indication on the meter goes out.  <p>Fig. 31</p>
<p>Q Overall distortion</p> <p>Equipment:</p> <ul style="list-style-type: none"> * Distortion meter * AF oscillator * ATT * Oscilloscope * Test tape... QZZCRA (reference blank tape) 	<ol style="list-style-type: none"> Test equipment connection is shown in fig. 32. Set the monitor selector to "source" position. Supply 315 Hz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.65 V. Change the monitor selector to "tape" position. Press the record and playback buttons, and measure distortion factor of tape monitor output signal.  <p>Fig. 32</p>

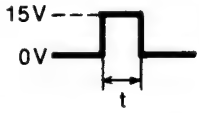
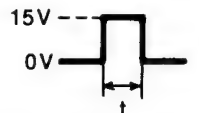
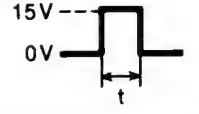
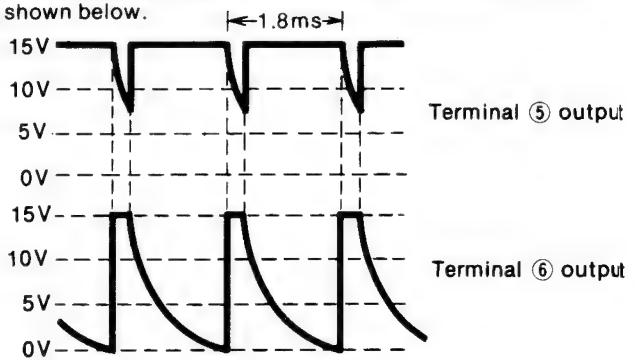
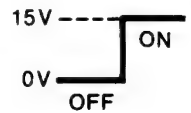
ITEM	MEASUREMENT & ADJUSTMENT
	<p>6. When the distortion factor does not satisfy the standard, check the bias current. When the bias current is lower than standard, distortion will increase. Care should be exercised in the adjustment because the bias current also has an influence on the overall frequency response. Refer to "The overall frequency response" and "The bias current adjustment".</p> <div data-bbox="566 479 962 524" style="border: 1px solid black; padding: 5px; text-align: center;"> Standard value: Less than 2.5% </div>
<p>Ⓜ Overall frequency response</p> <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT * Test tape (reference blank tape) <ul style="list-style-type: none"> ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal 	<p>Note:</p> <p>Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).</p> <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 26. 2. Load reference blank test tape. 3. Set the monitor selector to "source" position. 4. Supply 1 kHz signal from AF oscillator through ATT to LINE IN. 5. Adjust ATT so that input level is -20 dB below standard recording level (standard recording level = 0 VU). 6. At this time, LINE OUT level indicates 0.065 V. 7. Change the monitor selector to "tape" position. 8. Press the record and playback buttons and supply each frequency signals 1 kHz, 30 Hz, 70 Hz, 700 Hz, 6 kHz, 8 kHz, 10 kHz, 13 kHz, 15 kHz and 16 kHz. 9. Measure the tape monitor output level and express in dB the difference between the tape monitor output level of each frequency based on output level of 1 kHz. 10. Make sure that the measured value is within the range specified in the overall frequency response chart. <div data-bbox="946 573 1458 768"> <p style="text-align: center;">Overall frequency response chart (Normal)</p> <p style="text-align: center;">Fig. 33</p> </div> <div data-bbox="914 813 1484 1019"> <p style="text-align: center;">Overall frequency response chart (Fe-Cr, CrO₂, Metal)</p> <p style="text-align: center;">Fig. 34</p> </div>
<p>Adjustment-1</p>	<p>Adjustment-1 Using bias current</p> <ol style="list-style-type: none"> 1. When the frequency response between the middle and high frequency range becomes higher than the standard value, as shown by the solid line in fig. 35 increase the bias current by turning the following VR. <div data-bbox="601 1415 1003 1523" style="margin-left: 40px;"> Normal VR853 (L-CH), VR854 (R-CH) Fe-Cr VR202 CrO₂ VR203 Metal VR204 </div> 2. When it becomes lower, as shown by dotted line, reduce the bias current by turning in the direction opposite to arrow indication. <div data-bbox="1147 1296 1426 1518"> <p style="text-align: center;">Fig. 35</p> </div>
<p>Adjustment-2</p>	<p>Note:</p> <ol style="list-style-type: none"> 1. For adjustment when the bias current is lower than the standard value use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor. 2. For the method of bias current measurement, refer to "Bias current adjustment" on page 7. <p>Adjustment-2 Using the peaking coil for recording equalization</p> <p>When the frequency response is flat in the middle frequency range and makes a sharp rise or drop in the high frequency range, as shown in fig. 36, adjust by turning the following peaking coils.</p> <div data-bbox="569 1834 946 1942" style="margin-left: 40px;"> Normal L207 (L-CH), L208 (R-CH) Fe-Cr L205 (L-CH), L206 (R-CH) CrO₂ L203 (L-CH), L204 (R-CH) Metal L201 (L-CH), L202 (R-CH) </div> <div data-bbox="1141 1760 1426 1982"> <p style="text-align: center;">Fig. 36</p> </div>

ITEM	MEASUREMENT & ADJUSTMENT
<p>㊦ Dolby NR circuit</p> <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT * Oscilloscope 	<p>A. Dolby encoder block</p> <ol style="list-style-type: none"> 1. Set the Dolby NR selector to "OUT" position. 2. Supply 5kHz signal to LINE IN to obtain -35dB at test point MO. OUT on the Dolby encoder circuit board. 3. Then change the Dolby NR selector to "IN" position. 4. Measure the output level at test point REC OUT. 5. Confirm that the value at "IN" position is 8dB greater than the value at "OUT" position of Dolby NR selector. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: $+8 \pm 0.5\text{dB}$ </div> <ol style="list-style-type: none"> 6. If measured value is not within standard, adjust as follows. <ol style="list-style-type: none"> ① Set the Dolby NR selector to "IN" position. ② Turn VR104 clockwise completely. ③ At this time, adjust VR106 so that the output level at test point REC OUT becomes -25dB. ④ Then adjust VR104 so that the output level at test point REC OUT becomes -27dB. <p>B. Dolby decoder block</p> <ol style="list-style-type: none"> 1. Set the Dolby NR selector to "OUT" position. 2. Supply 5kHz signal to test point L.T.P and R.T.P on the playback EQ AMP circuit board and adjust ATT to obtain -27dB at test point MO. OUT on the Dolby decoder circuit board. 3. Then change the Dolby NR selector to "IN" position. 4. Measure the output level at test point MO. OUT. 5. Confirm that the value at "IN" position is 8dB smaller than the value at "OUT" position of Dolby NR selector. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: $-8 \pm 0.5\text{dB}$ </div> <ol style="list-style-type: none"> 6. If measured value is not within standard, adjust as follows. <ol style="list-style-type: none"> ① Set the Dolby NR selector to "IN" position. ② Turn VR103 counterclockwise. ③ At this time, adjust VR105 so that the output level at test point MO. OUT becomes -37dB. ④ Then adjust VR103 so that the output level at test point MO. OUT becomes -35dB.
<p>㊦ Overall S/N ratio</p> <p>Equipment:</p> <ul style="list-style-type: none"> * VTVM * AF oscillator * ATT * Oscilloscope * Test tape ... QZZCRX (reference blank tape) 	<ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 26. 2. Set the monitor selector to tape position and tape selector to CrO₂ position. 3. Load reference blank test tape (QZZCRX). 4. Press the record and playback buttons. 5. Supply 1kHz signal to LINE IN and adjust ATT so that tape monitor output level at LINE OUT indicates 0.65V. 6. Then, disconnect input plug to LINE IN. 7. Measure tape monitor output signal levels of 1kHz and no signal level (noise), and determine the ratio in decibels (dB). 8. The value is difference between "Playback S/N and overall S/N", but for decibel calculation refer to "Playback S/N measurement" on page 6. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: Greater than 45dB (without NAB filter) </div>
<p>㊦ Test oscillator</p>	<p>Test oscillation level</p> <ol style="list-style-type: none"> 1. Set the input selector to "400Hz/8kHz" position and monitor selector to "source" position. 2. Press the record and pause buttons. 3. Measure the output level of LEFT (400Hz) and RIGHT (8kHz) channels at LINE OUT. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: Same level </div> <ol style="list-style-type: none"> 4. If output levels are not same, adjust VR3.

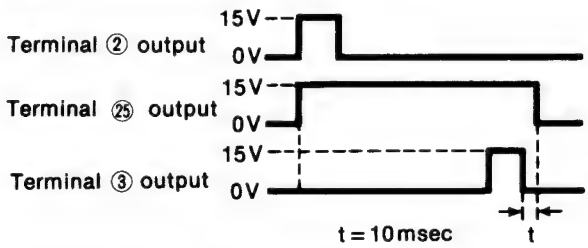
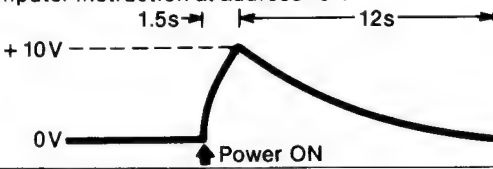
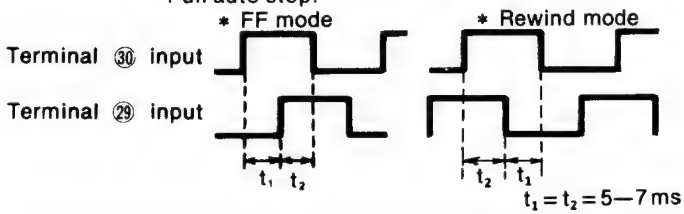
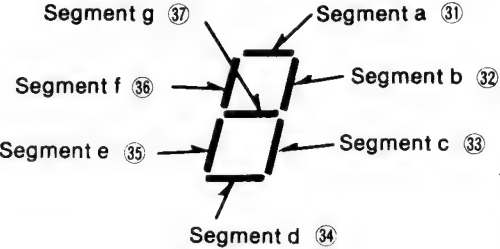
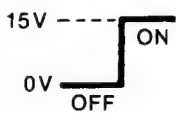
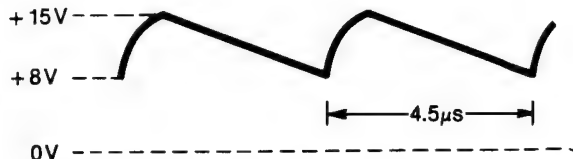
ADJUSTMENT PARTS LOCATION



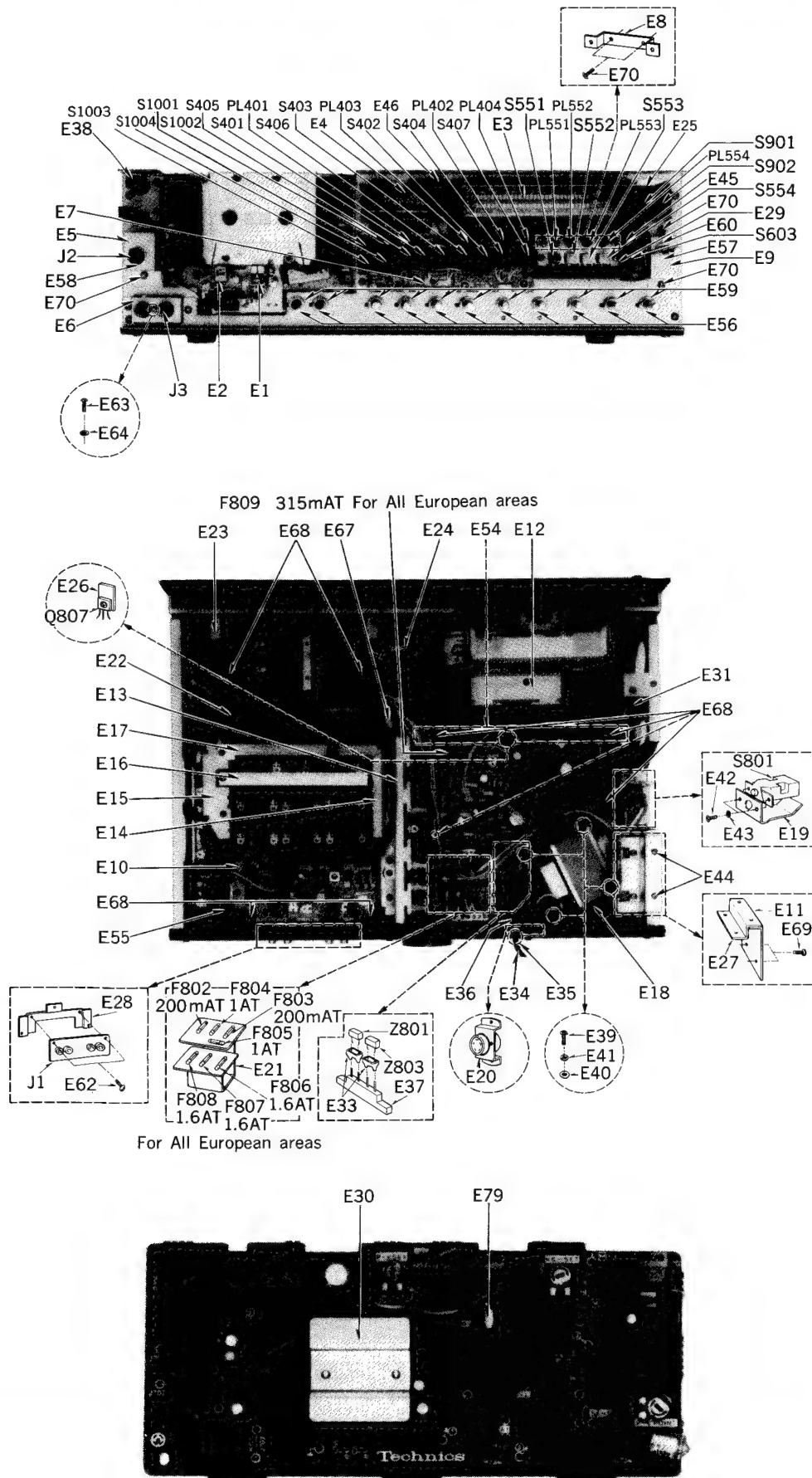
MICROCOMPUTER TERMINAL OPERATION TABLE

Terminal No.	Symbol	Name	Function/Operation
①	VSS		<ul style="list-style-type: none"> Power $15V \pm 0.5V$
②	CO11	C-port output	<ul style="list-style-type: none"> Emits Play operation signal in memory PLAY mode. Emits temporary PLAY operation signal for focusing stop in memory STOP mode.  <p>$t = 0.1 - 1 \text{ msec}$</p>
③	CO10	C-port output	<ul style="list-style-type: none"> Emits STOP operation signal in memory PLAY, memory STOP, and AUTO STOP modes.  <p>$t = 0.6 - 1 \text{ msec}$</p>
④	CO9	C-port output	<ul style="list-style-type: none"> Emits REW operation signal in memory REW mode.  <p>$t = 0.6 - 1 \text{ msec}$</p>
⑤ ⑥	CO8 CO7	C-port output	<ul style="list-style-type: none"> The output gives dynamic scan signal to S1003 and S1004 as shown below.  <p>Terminal ⑤ output</p> <p>Terminal ⑥ output</p>
⑦ ⑧ ⑨	CO6 CO5 CO4	C-port output	<ul style="list-style-type: none"> Emits the signals to indicate M1, MP, M2 on the digital counter. Terminal ⑦for M2 Terminal ⑧for MP Terminal ⑨for M1  <p>ON</p> <p>OFF</p>

Terminal No.	Symbol	Name	Function/Operation																				
⑩ ⑪ ⑫ ⑬	CO3 CO2 CO1 CO0	C-port output	<ul style="list-style-type: none"> Sends scan signal to each grid of digital counter to turn on grids G1—G4 <div> <p>Terminal ⑩ output</p> <p>Terminal ⑪ output</p> <p>Terminal ⑫ output</p> <p>Terminal ⑬ output</p> </div>																				
⑭ ⑮ ⑯ ⑰	AI3 AI2 AI1 AI0	A-port input	<ul style="list-style-type: none"> Reads in each control mode of REW, FF, PLAY, REC. <p>Terminal ⑭ input..... H in REW mode</p> <p>Terminal ⑮ input..... H in FF mode</p> <p>Terminal ⑯ input..... H in PLAY mode</p> <p>Terminal ⑰ input..... H in REC mode</p> <p>* H Level = +15V</p>																				
⑱	BI3	B-port input	<ul style="list-style-type: none"> Reads in 0.94Hz signal (about 1 sec. interval) from strobo illumination divider circuit to use it as the reference interval for take-up tension control. <p>$t = 1.06 \text{ sec}$</p>																				
⑲	BI2	B-port input	<ul style="list-style-type: none"> With memory switch S1003 or S1004 pressed, it reads in scan signal from terminal (5) or (6) to check the status of control of S1003 and S1004. <div> <p>With S1003 pressed</p> <p>With S1004 pressed</p> </div>																				
⑳ ㉑	BI1 BI0	B-port input	<ul style="list-style-type: none"> With memory switches S1001 and S1002 pressed, it reads in H signal. <p>Terminal ㉑ input.....S1002</p> <p>Terminal ㉑ input.....S1001</p> <p>$t = \text{switch pressing time}$</p>																				
㉒ ㉓	EO0 EO1	E-port output	<ul style="list-style-type: none"> Sends 2-bit tension control signal to the reel motor drive circuit. <p>At start of PLAY, terminal ㉒ output is H and ㉓ output is L for 15 sec. irrespective of tape winding diameter.</p> <p>After that, signals shown below are emitted according to the tape diameter.</p> <table border="1"> <thead> <tr> <th>Tape travel</th><th>㉒</th><th>㉓</th><th>Motor torque</th></tr> </thead> <tbody> <tr> <td>Start</td><td>H</td><td>H</td><td>Low</td></tr> <tr> <td>↓</td><td>H</td><td>L</td><td>↓</td></tr> <tr> <td>↓</td><td>L</td><td>H</td><td>↓</td></tr> <tr> <td>End</td><td>L</td><td>L</td><td>High</td></tr> </tbody> </table>	Tape travel	㉒	㉓	Motor torque	Start	H	H	Low	↓	H	L	↓	↓	L	H	↓	End	L	L	High
Tape travel	㉒	㉓	Motor torque																				
Start	H	H	Low																				
↓	H	L	↓																				
↓	L	H	↓																				
End	L	L	High																				

Terminal No.	Symbol	Name	Function/Operation
②⑤	EO3	E-port output	<ul style="list-style-type: none"> Delivers an output, to ground the signal going to LINE OUT, for muting purposes during focusing of memory STOP (M1, M2). 
②⑦	RST	Reset	<ul style="list-style-type: none"> Initiates computer instruction at address "0". 
②⑨ ③①	SNS0 SNS1	Sense input	<ul style="list-style-type: none"> Reads in the rotational state of reel table from hall IC output in order to obtain the following functions. Functions: Tape tension control. Digital counter indication (tape travel) Full auto stop. 
③① ③② ③③ ③④ ③⑤ ③⑥ ③⑦	DO0 DO1 DO2 DO3 DO4 DO5 DO6	D-port output	<ul style="list-style-type: none"> Emits the signal to activate each segment for the indication of tape travel amount on the digital tape counter. <p>Relationship between terminal and segment.</p>  
④①	OSC	Oscillation input	<ul style="list-style-type: none"> This is the control terminal of oscillation circuit for producing the clock signal on which the computer operation is based.  <p>Note: Do not connect the probe of oscilloscope to this terminal directly, otherwise the oscillation frequency may vary.</p>

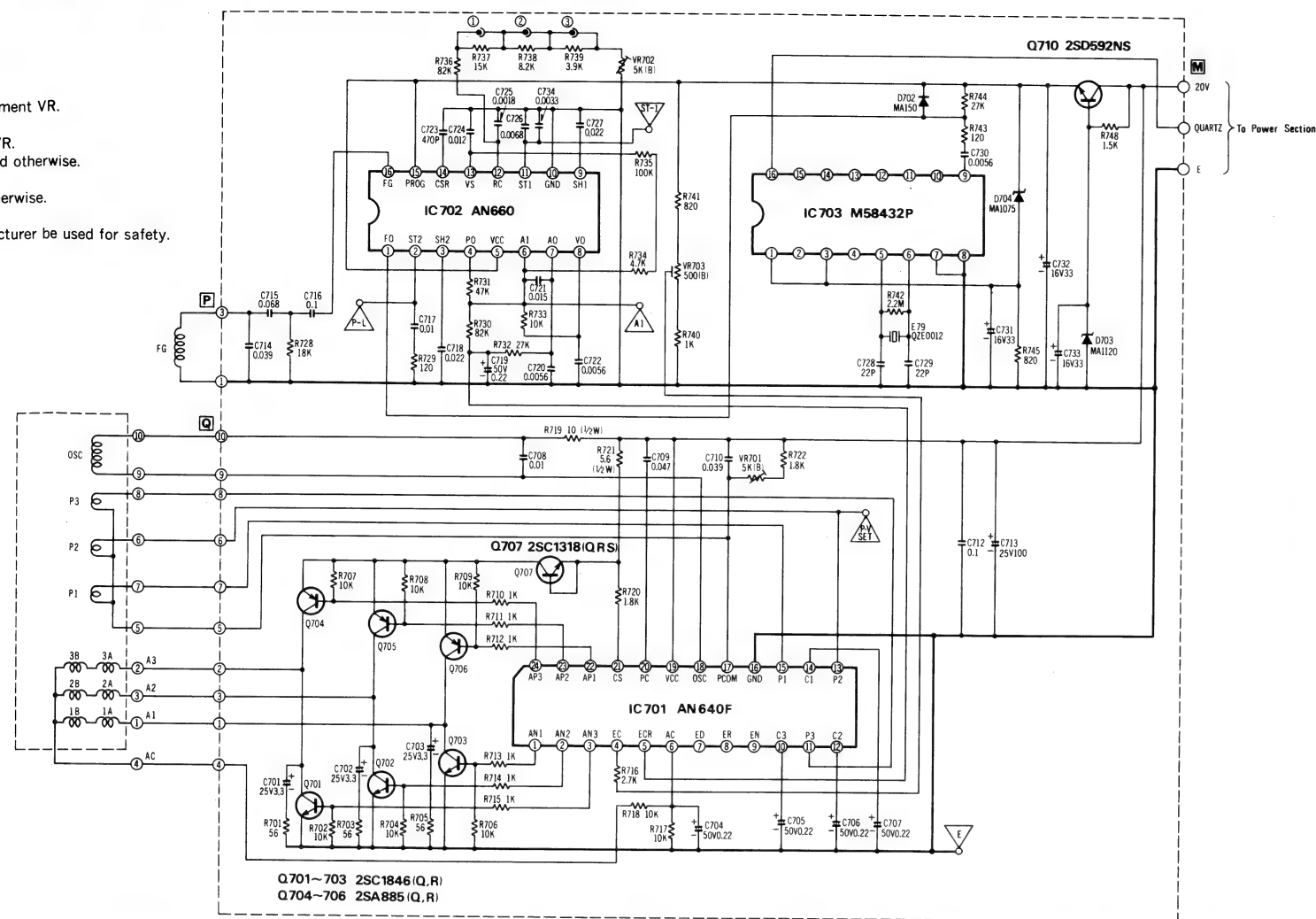
ELECTRICAL PARTS LOCATION



Ref. No.	Part No.	Part Name & Description
ELECTRICAL PARTS		
E1	WY1403Z	Combination Head (Record/Playback)
E2	QWY2137Z	Erase Head
E3	QSL5005RF	Fluorescent Level Meter
E4	QZE0027	Digital Tape Counter
E5	QMA3623	Headphones Jack Angle
E6	QMA3624	Microphone Jack Angle
E7	QMA3627	Circuit Board Angle
E8	QMA3626	Switch Angle-B
E9	QMA3625	Volume Angle
E10	QMA3682	Circuit Board Angle
E11	QTH1145	Heat Sink-A
E12	QMA3643	Motor Circuit Board Angle-B
E13	QMA3638	Control Circuit Board Angle
E14	QMA3640	Dolby NR Circuit Board Angle
E15	QMA3639	Record Circuit Board Angle
E16	QTS1457	Shield Plate
E17	QTS1472	Shield Plate-A
E18	QMA3635	Transformer Angle
E19	QMA3637	Switch Angle
E20	QMA2885	AC Power Voltage Select Switch Angle
E21	QMA3804	Fuse Angle
*For All European areas.		
E22	QMA3629	Meter Angle-A
E23	QMA3630	Meter Angle-B
E24	QMA3641	Circuit Board Angle-A
E25	QMH2045	Meter Holding Angle
E26	QTH1118	Heat Sink
E27	QTH1146	Heat Sink-B
E28	QMA3300	Jack Board Angle
E29	QMA3628	Switch Angle-A
E30	QTH1136	Heat Sink
E31	QXR0441	Push Button Assembly
E33	QTW1118	Spark Killer Cover
E34	QFC1204M	AC Power Cord
*For All European areas except United Kingdom.		
	QFC1205M	"
*For United Kingdom.		
	QFC1208M	"
*For Australia.		
E35	QBJ1425	Cord Bushing
E36	QTD1164	Cord Clamper
E37	QJT4017	4 Pin Terminal
E38	QKJ0242	Cap
E39	XSN4+8S	Screw $\pm 4 \times 8$
E40	XWA4B	Washer
E41	XWG4	"
E42	XSN3+5S	Screw $\pm 3 \times 5$
E43	XWA3B	Washer
E44	XTN3+8B	Tapping Screw $\pm 3 \times 8$
E45	QMH2043	LED Holder
E46	QMH2044	Counter Holder
E47	QJT1053	Contact-A
E48	QJT1054	Contact-B
E49	QJS1923TN	9 Pin Connector
E50	QJS1925TN	15 Pin Connector
E51	QJS1924TN	12 Pin Connector
E52	QJS1922TN	6 Pin Connector
E53	QJS1921TN	3 Pin Connector
E54	QMA3636	Circuit Board Angle
E55	QMA3633	Shield Angle
E56	QNQ1004	Nut 8 ϕ
E57	QNQ1039	Nut 9 ϕ
E58	QNQ1070	Nut 12 ϕ
E59	QWQ2002	Washer 8 ϕ
E60	QWQ1133	Washer 9 ϕ
E61	QJS1923TNL	9 Pin Connector
E62	XSN3+6S	Screw $\pm 3 \times 6$
E63	XSN3+5S	Screw $\pm 3 \times 5$
E64	XWA3B	Washer
E65	QJP1925TNL	15 Pin Plug
E66	QJP1924TNL	12 Pin Plug
E67	QTD1250XN	Cord Clamper
E68	XTW3+8B	Tapping Screw $\pm 3 \times 8$
E69	XSS3+5S	Screw $\pm 3 \times 5$
E70	XTN3+6B	Tapping Screw $\pm 3 \times 6$
E71	QJP1922TN	6 Pin Post
E72	QJP1923TN	9 Pin Post
E73	QJP1922TNL	6 Pin Post
E74	QJP1923TNL	9 Pin Post
E75	XSN3+20S	Screw $\pm 3 \times 20$
E76	QJP1924TN	12 Pin Post
E77	QJP1925TN	15 Pin Post
E78	QJP1921TN	3 Pin Post
E79	QZE0012	Crystal

Capstan Motor Section

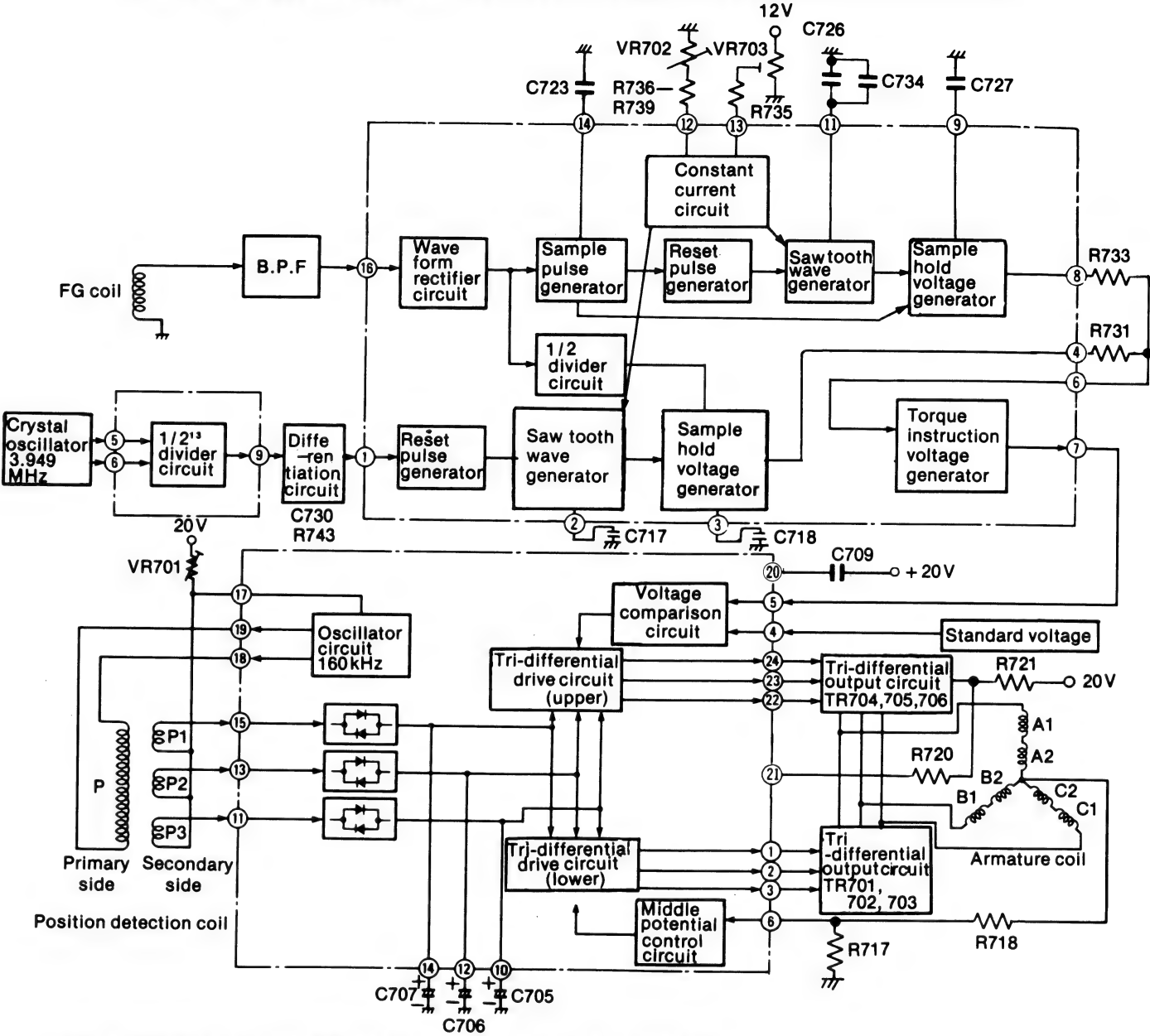
detection coil output level adjustment VR.
ck point adjustment VR.
DC power voltage adjustment VR.
ms (Ω), 1/4 watt unless specified otherwise.
ofarads (μ F) unless specified otherwise.
by parts specified by the manufacturer be used for safety.



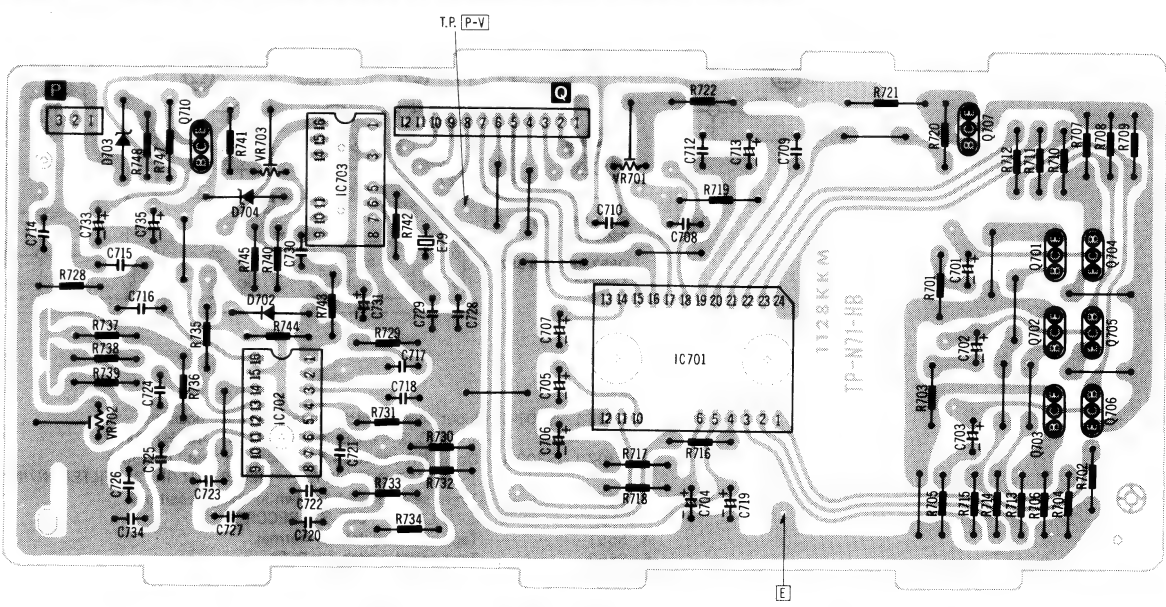
WAVE FORM IC703 and IC702 (CAPSTAN MOTOR SECTION)

Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form
IC703 5, 6	around 4.2V Crystal signal	IC702 16	around 6V FG signal	IC702 3, 4	around 5V
IC703 9	around 5V around 0V 2ms	IC702 14	around 8V around 0V 1ms	IC702 6	around 6.5V
IC702 1	around 12V around 7V	IC702 11	around 6V around 0V	IC702 7	around 7.4V
IC702 2	around 3V around 1.4V	IC702 9	around 6.4V	IC702 8	around 6.6V

BLOCK DIAGRAM (CAPSTAN MOTOR SECTION)



CAPSTAN MOTOR CIRCUIT BOARD

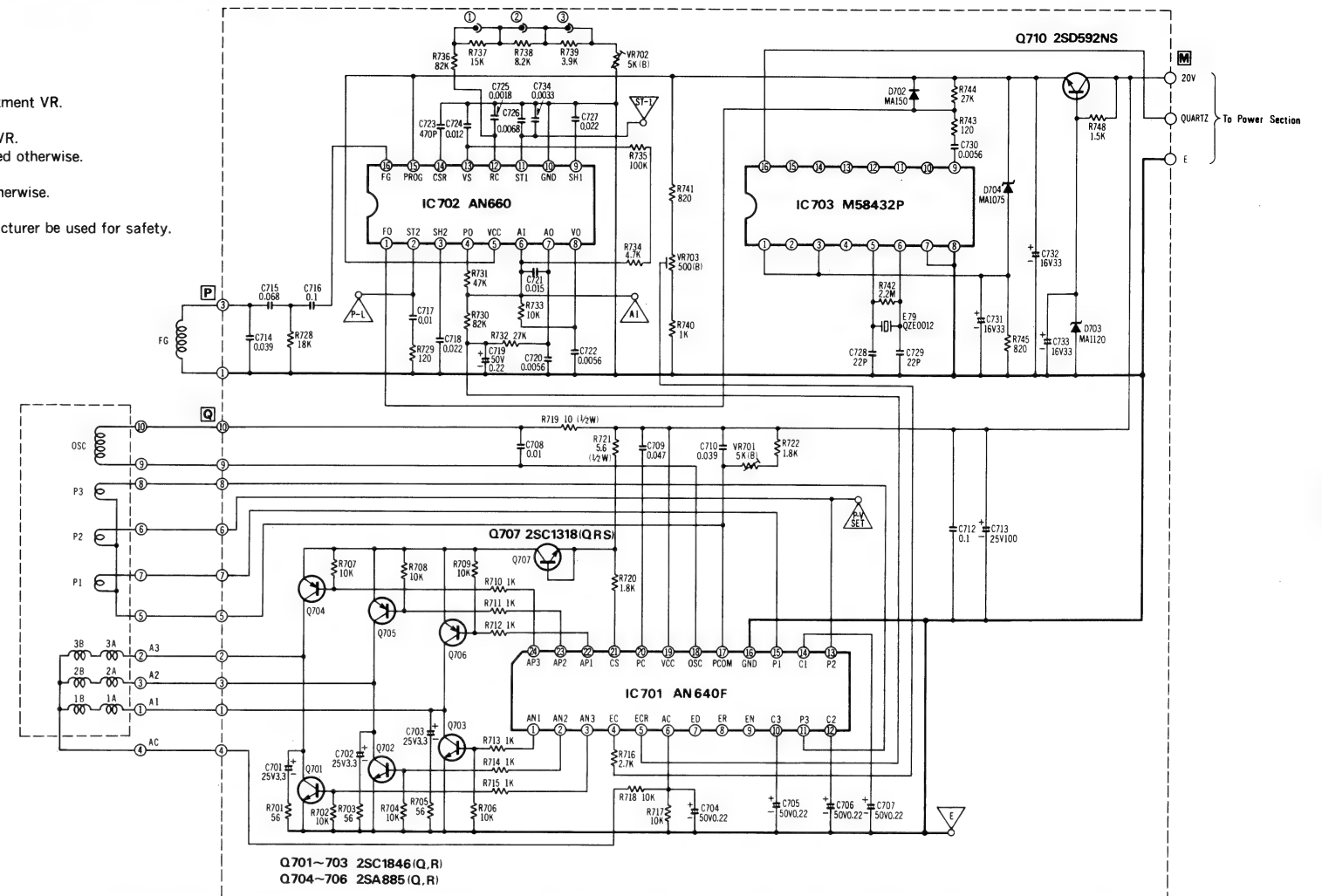


NOTE: The circuit shown in red on the conductor is +B (bias) circuit.

Capstan Motor Section

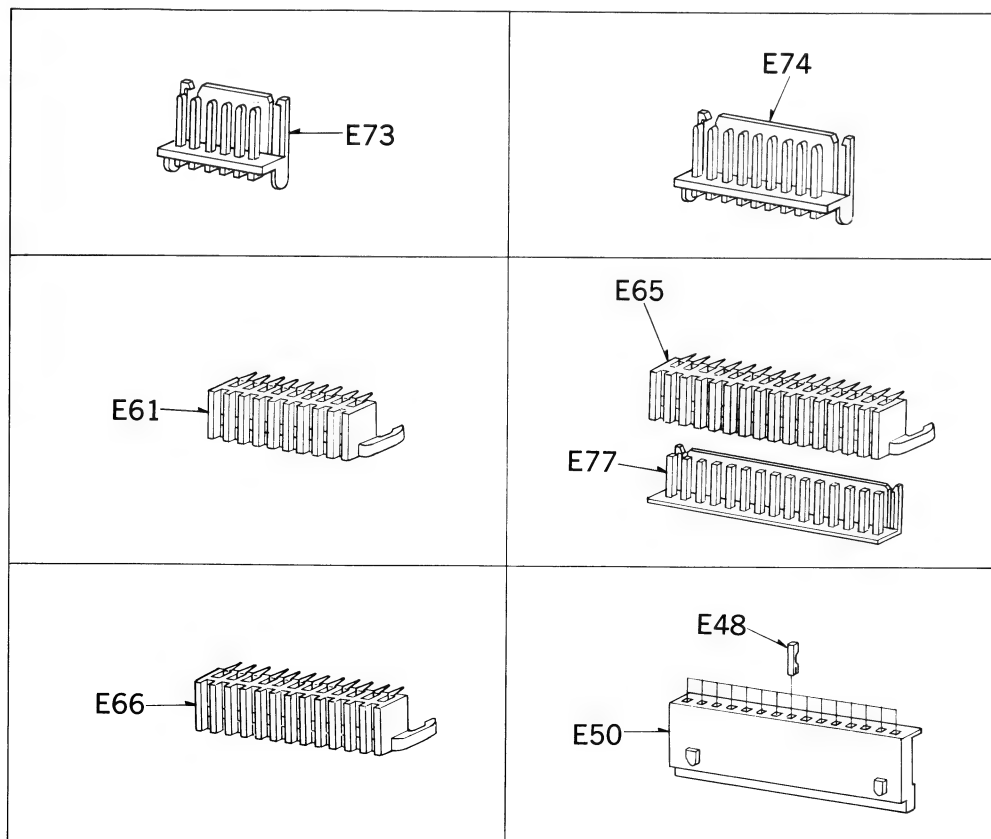
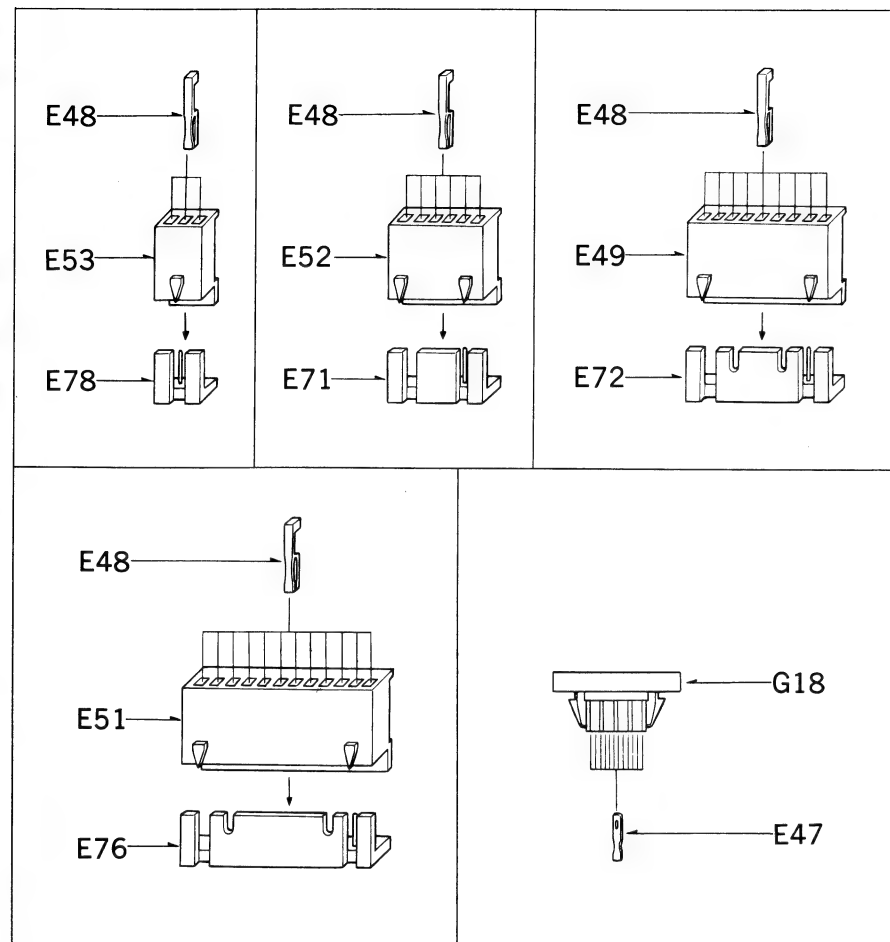
NOTE:

1. VR701.....Position detection coil output level adjustment VR.
2. VR702.....Phase lock point adjustment VR.
3. VR703.....Standard DC power voltage adjustment VR.
4. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
K=1,000 Ω .
5. Capacity are in microfarads (μ F) unless specified otherwise.
P=Pico-farads.
6. Δ indicates that only parts specified by the manufacturer be used for safety.



WAVE FORM IC703 and IC702 (CAPSTAN MOTOR SECTION)

Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form
IC703 5, 6	around 4.2V Crystal signal	IC702 16	around 6V FG signal	IC702 3, 4	around 5V
IC703 9	around 5V around 0V 2ms	IC702 14	around 8V around 0V 1ms	IC702 6	around 6.5V
IC702 1	around 12V around 7V	IC702 11	around 6V around 0V	IC702 7	around 7.4V
IC702 2	around 3V around 1.4V	IC702 9	around 6.4V	IC702 8	around 6.6V



FG coil

Crystal oscillator
3.949 MHz

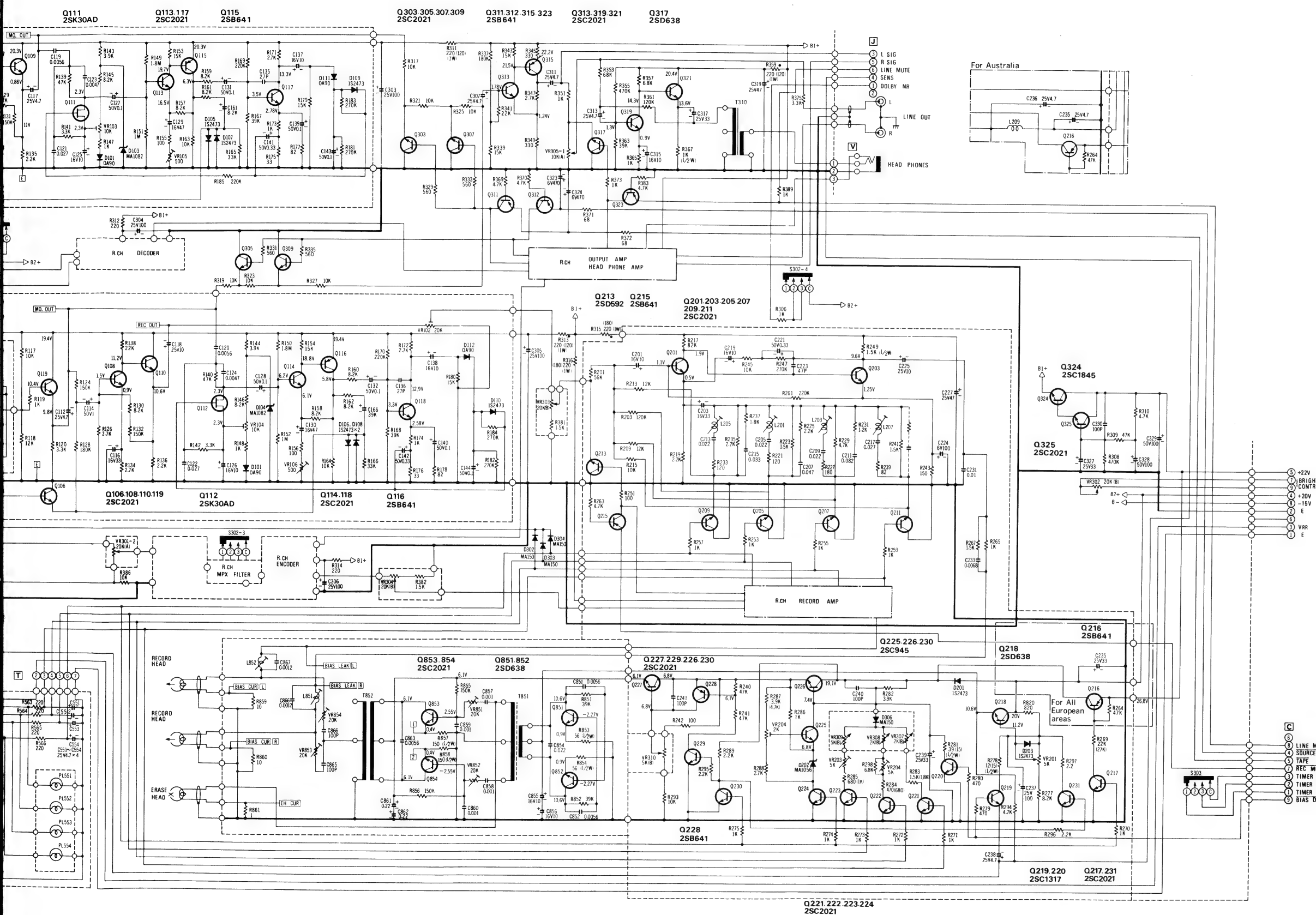
Primary side

Position det

CAP

NOTE: The

RS-M95













9. VR3Test oscillator level adjustment VR at 400Hz.
10. VR101Playback gain adjustment VR.
11. VR102Record gain adjustment VR.
12. VR103, 105Decoder (Playback DOLBY) adjustment VR.
13. VR104, 106Encoder(Record DOLBY) adjustment VR.
14. VR201Erase current adjustment VR at metal position.
15. VR202Bias current adjustment VR at Fe-Cr position.
16. VR203Bias current adjustment VR at CrO₂ position.
17. VR204Bias current adjustment VR at Metal position.
18. VR301Input level control.
19. VR302Meter light control.

- | | | |
|-----|------------|---|
| 20. | VR303, 304 | Record calibration control. |
| 21. | VR305 | Output level control. |
| 22. | VR307 | Bias current adjustment control for normal tape. |
| 23. | VR308 | Bias current adjustment control for Fe-Cr tape. |
| 24. | VR309 | Bias current adjustment control for CrO ₂ tape. |
| 25. | VR310 | Bias current adjustment control for metal tape. |
| 26. | VR851, 852 | Bias wave form correction VR at metal position. |
| 27. | VR853, 854 | Bias current adjustment VR at normal position. |
| 28. | L201, 202 | Record equalizer adjustment coil for CrO ₂ tape. |
| 29. | L203, 204 | Record equalizer adjustment coil for Fe-Cr tape. |
| 30. | L205, 206 | Record equalizer adjustment coil for metal tape. |

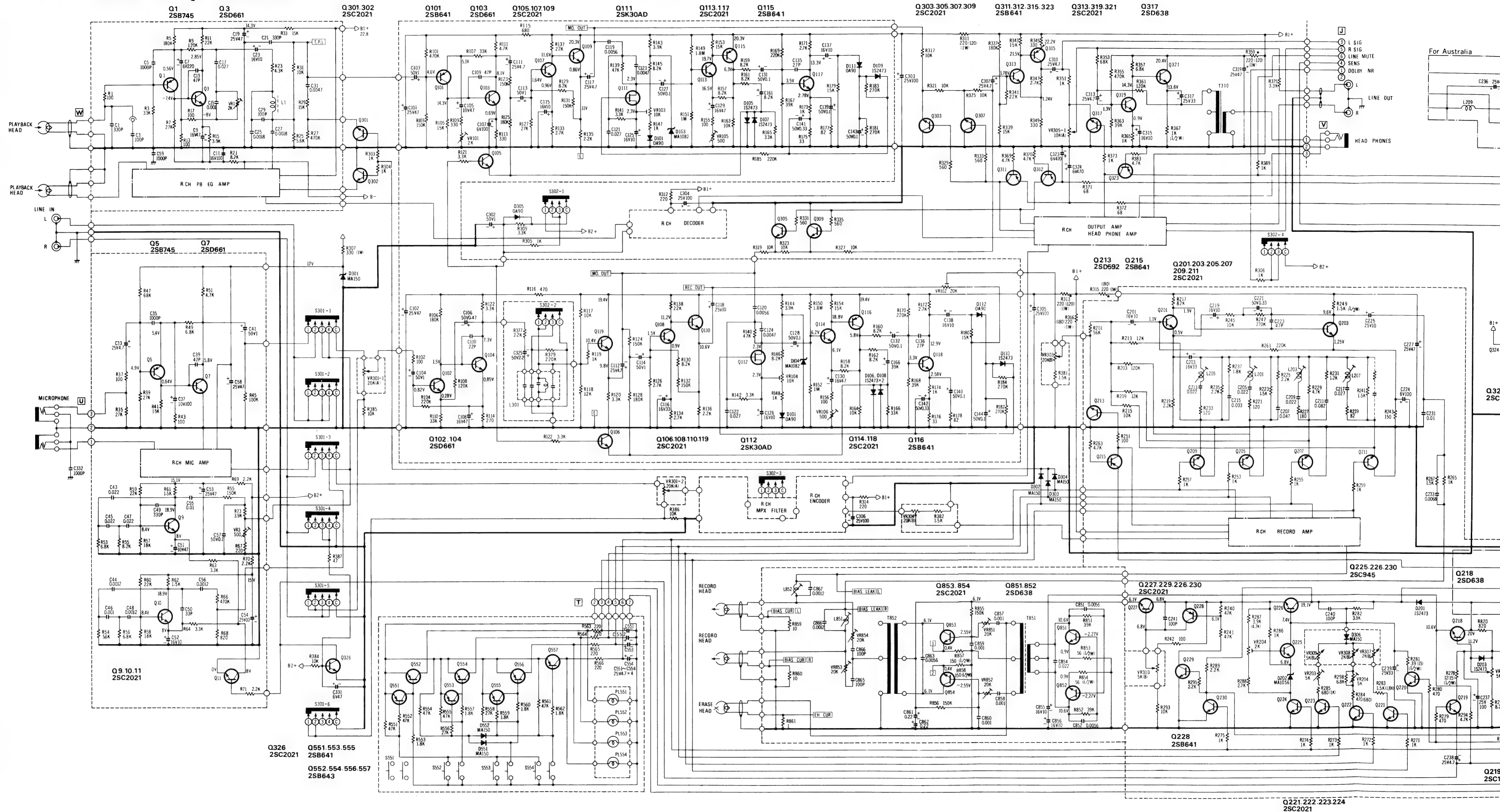
31. L207, 208Record equalizer adjustment coil for normal tape.
32. L851, 852Bias leakage adjustment coil.
33. The resistance () show for Australia.
34. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
K=1,000 Ω .
35. Capacity are in microfarads (μF) unless specified otherwise.
P=Pico-farads.
36. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.

ALTER IN/IN.

NOTE: RESISTORS	CAPACITORS
ERD ... Carbon	ECG□ ... Ceramic
ERG ... Metal-oxide	ECK□ ... Ceramic
ERF ... Metal-film	ECM□ ... Ceramic
ERX ... Metal-film	ECF□ ... Ceramic
ERQ ... Fuse type metallic	ECQM ... Polyester
ERC ... Solid	ECQE ... Polyester
ERF ... Cement	ECQF ... Polypropylene
	ECE□ ... Electrolytic
	ECEN ... Non polar electrolytic
	EQCS ... Polystyrene
	EQS□ ... Tantalum

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS				R205, 206, 209, 210	
R1, 2	ERD25TJ101	R265, 266	ERD25TJ102	R211, 212	ERD25TJ103
R3, 4	ERD25TJ333				
R5, 6	ERD25TJ184	R267, 268		R213, 214	ERD25TJ154
R7, 8	ERD25TJ273		ERD25TJ152		ERD25TJ223
R9, 10	ERD25TJ124	R269		R215, 216	ERD25TJ103
R11, 12	ERD25TJ223	 ERD25TJ273			
R13, 14	ERD25TJ101	*For All European areas.		R217, 218	ERD25TJ823
R15, 16	ERD25TJ392	 ERD25TD223			
R17, 18	ERD25TJ101	*For Australia.		R219, 220	ERD25TJ222
R19, 20	ERD25TJ332	R270, 271, 272, 273, 274, 275			
		ERD25TJ102		R221, 222	ERD25TJ121
R21, 22	ERD25TJ822	R276	ERD25TJ821		
R23, 24	ERD25TJ472	R277	ERD25TJ822		
R25, 26	ERD25TJ562	R278		R223, 224	ERD25TJ152
R27, 28	ERD25TJ474	 ERD25HJ120			
R29, 30	ERD25TJ153	*For All European areas.		R225, 226	ERD25TJ222
R31, 32	ERD25TJ103	 ERD25TJ150			
R33, 34	ERD25TJ153	*For Australia.		R227, 228	ERD25TJ181
R35, 36	ERD25TJ273	R279, 280			
R37, 38	ERD25TJ101		ERD25TJ471	R229, 230	ERD25TJ472
R39, 40	ERD25TJ273	R281			
		 ERD25HJ390		R231, 232	ERD25TJ122
R41, 42	ERD25TJ153	*For All European areas.			
R43, 44	ERD25TJ101	 ERD25TJ150		R233, 234	ERD25TJ121
R45, 46	ERD25TJ104	*For Australia.			
R47, 48	ERD25TJ683	R282	ERD25TJ332	R235, 236	ERD25TJ152
R49, 50	ERD25TJ682				
R51, 52	ERD25TJ472	R125	ERD25TJ184	R237, 238	ERD25TJ152
R53	ERD25TJ682	R126, 127			
R54	ERD25TJ562		ERD25TJ273	R239, 240	ERD25TJ820
R55	ERD25TJ822	R128	ERD25TJ184		ERD25TJ820
R56	ERD25TJ682	R129, 130		R283	ERD25TJ152
			ERD25TJ822	R284	
R57, 58	ERD25TJ183	R131, 132		 ERD25TJ471	
R59, 60	ERD25TJ223		ERD25TJ154	*For All European areas.	
R61, 62	ERD25TJ152	R133, 134		 ERD25TJ681	
R63, 64	ERD25TJ332		ERD25TJ272	*For Australia.	
R65	ERD25TJ154	R135, 136		R285	ERD25TJ102
R66	ERD25TJ474		ERD25TJ222	*For Australia.	
R67	ERD25TJ221	R137, 138		R286	ERD25TJ102
R68	ERD25TJ821		ERD25TJ223	R287	
R69, 70, 71		R139, 140		 ERD25TJ392	
	ERD25TJ222		ERD25TJ473	*For All European areas.	
R72	ERD25TJ392			 ERD25TJ472	
		R141, 142		*For Australia.	
R101	ERD25TJ474		ERD25TJ332	R288	ERD25TJ272
R102	ERD25TJ101	R143, 144		R289	ERD25TJ222
R103	ERD25TJ154		ERD25TJ392	R290, 291	
R104	ERD25TJ224	R145, 146			ERD25TJ473
R105	ERD25TJ153		ERD25TJ822	R292	ERD25TJ101
R106	ERD25TJ184	R147, 148		R293	ERD25TJ103
R107	ERD25TJ333		ERD25TJ102	R294	ERD25TJ472
R108	ERD25TJ124	R149, 150			
R109	ERD25TJ331		ERD25TJ185	R295, 296, 297	ERD25TJ222
R110	ERD25TJ332	R151, 152			ERD25TJ682
			ERD25TJ105	R298	
R111	ERD25TJ472	R153, 154		R301, 302	ERD25TJ473
R112	ERD25TJ332		ERD25TJ153		
R113	ERD25TJ331	R155, 156		R303, 304, 305, 306	ERD25TJ102

SCHEMATIC DIAGRAM
Main Amp Section



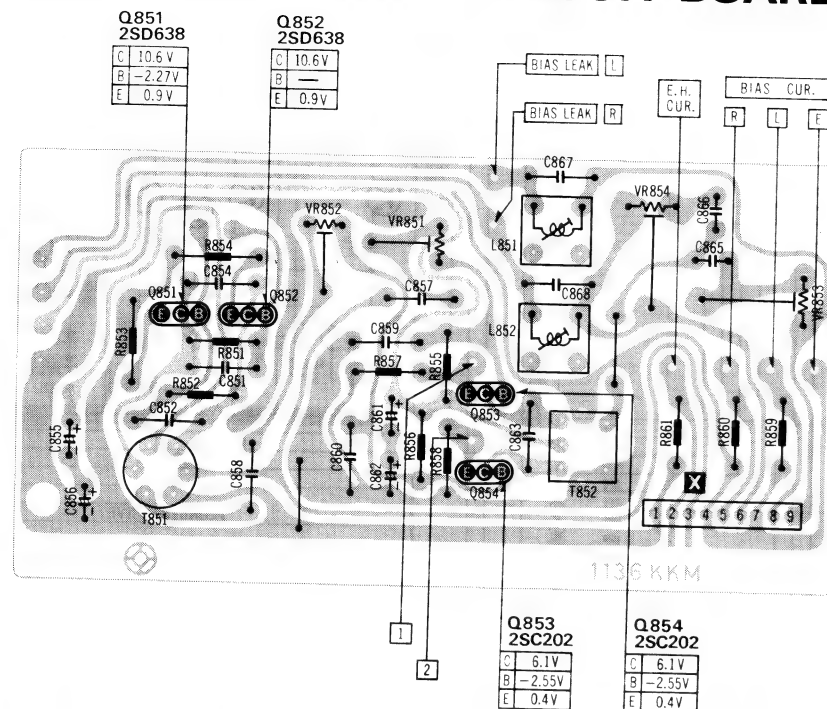
NOTE:

- S301-1~S301-6.....Input select switch (shown in "mic" position)
1...MIC, 2...LINE, 3...400Hz, 4...400Hz/8kHz
- S302-1~S302-4.....Dolby NR select switch (shown in "out" position)
1...FILTER OUT/OUT, 2...FILTER OUT/IN, 3...FILTER IN/IN
- S303.....Timer select switch (shown in "play" position)
1...PLAY, 2...OFF, 3...RECORD
- S551.....Tape select switch for normal.
- S552.....Tape select switch for Fe-Cr.
- S553.....Tape select switch for CrO₂.
- S554.....Tape select switch for metal.
- VR1, 2.....Playback equalizer adjustment VR at 400Hz.
- VR3.....Test oscillator level adjustment VR at 400Hz.
- VR101.....Playback gain adjustment VR.
- VR102.....Record gain adjustment VR.
- VR103, 105.....Decoder (Playback DOLBY) adjustment VR.
- VR104, 106.....Encoder (Record DOLBY) adjustment VR.
- VR201.....Erase current adjustment VR at metal position.
- VR202.....Bias current adjustment VR at Fe-Cr position.
- VR203.....Bias current adjustment VR at CrO₂ position.
- VR204.....Bias current adjustment VR at Metal position.
- VR301.....Input level control.
- VR302.....Meter light control.
- VR303, 304.....Record calibration control.
- VR305.....Output level control.
- VR307.....Bias current adjustment control for normal tape.
- VR308.....Bias current adjustment control for Fe-Cr tape.
- VR309.....Bias current adjustment control for CrO₂ tape.
- VR310.....Bias current adjustment control for metal tape.
- VR851, 852.....Bias wave form correction VR at metal position.
- VR853, 854.....Bias current adjustment VR at normal position.
- L201, 202.....Record equalizer adjustment coil for CrO₂ tape.
- L203, 204.....Record equalizer adjustment coil for Fe-Cr tape.
- L205, 206.....Record equalizer adjustment coil for metal tape.
- L207, 208.....Record equalizer adjustment coil for normal tape.
- L851, 852.....Bias leakage adjustment coil.
- The resistance () show for Australia.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
K=1,000Ω.
- Capacity are in microfarads (μF) unless specified otherwise.
P=Pico-farads.
- All voltage values shown in circuitry are under no signal condition with volume control at minimum position.

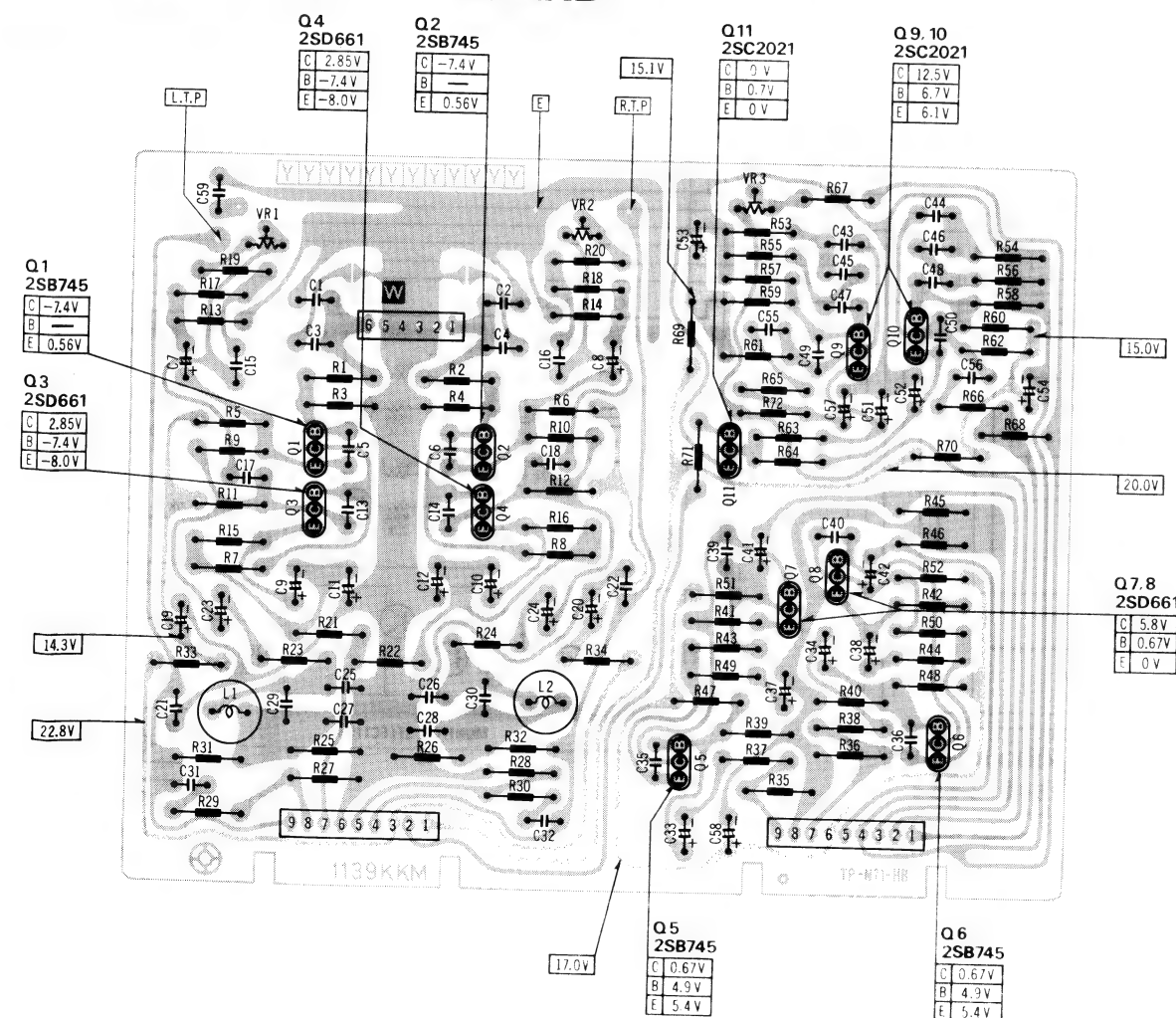
NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
R347, 348	ERD25TJ272	R463	ERD25TJ101	R645	ERD25TJ272	R818	ERD25TJ154	R953, 954	ERD25TJ682	VR906, 907	EVNK4AA00B14	C211, 212	ECQM05823KZ
R349, 350	ERD25TJ331	R464	ERD25TJ473	R646	ERD25TJ103	R819	ERD25TJ153	R955, 956	ERD25TJ682	CAPACITORS			
R351, 352	ERD25TJ102	R465	ERD25TJ562	R647	ERG12ANJ181	R820	ERG1ANJ471	R957, 958	ERD25TJ122	C1, 2	ECQS1331JZ	C213, 214	ECQM05223KZ
R353, 354	ERD25TJ683	R466, 467	ERG12ANJ562	R648	ERD25TJ272	R821	ERX1ANJR47	R959, 960	ERD25TJ122	C3, 4	ECQS1101JZ	C215, 216	ECQM05473KZ
R355, 356	ERD25TJ474	R468	ERG12ANJ153	R649	ERD25TJ473	R822	ERD25TJ101	R961, 962	ERD25TJ102	C5, 6	ECCKD1H102K	C217, 218	ECQM05273KZ
R357, 358	ERD25TJ682	R469	ERG12ANJ153	R650, 651	ERD25TJ472	R823	ERD25TJ123	R963, 964	ERD25TJ102	C7, 8	ECEA0JS221	C219, 220	ECEA1HS100
R359, 360	ERGIANJ221	R470, 471	ERD25TJ473	R661	ERD25TJ473	R824	ERD25TJ332	R965, 966	ERD25TJ123	C9, 10	ECEA1HS470	C221, 222	ECEA50ZR33
*For All European areas.	ERGIANJ121	R472	ERD25TJ153	R662	ERD25TJ101	*For All European areas.	ERG12ANJ122	R967, 968	ERD25TJ123	C11, 12	ECEA1HS101	C223, 224	ECCD1H470K
*For Australia.	ERGIANJ121	R473	ERD25TJ562	R663, 664	ERD25TJ101	*For Australia.	ERG12ANJ122	R970	ERD25TJ391	C13, 14	ECCD1H470K	C225, 226	ECEA1ES100
R361, 362	ERD25TJ124	R474	ERD25TJ473	R665	ERD25TJ273	R825	ERD25TJ471	R971	ERD25TJ683	C15, 16	ECQM05102KZ	C227, 228	ECEA1ES470
R363, 364	ERD25TJ393	R475	ERD25TJ562	R666	ERD25TJ224	*For All European areas.	ERG12ANJ122	R972	ERD25TJ102	C17, 18	ECQM05273JZ	C229, 230	ECEA1AS101
R365, 366	ERD25TJ102	R476, 479	ERD25TJ224	R667	ERD25TJ332	R827	ERD25TJ152	R973, 974, 975	ERD25TJ683	C19, 20	ECEA1ES470	C231, 232	ECQM05103KZ
R367, 368	ERG12ANJ102	R482	ERD25TJ471	R668	ERD25TJ272	R827	ERD25TJ152	R977	ERD25TJ391	C21, 22	ECCD1H331K	C233, 234	ECQM05682KZ
R369, 370	ERD25TJ472	R483	ERD25TJ473	R669	ERD25TJ473	*For All European areas.	ERG12ANJ122	R978, 979	ERD25TJ101	C23, 24	ECEA1HS100	C235	ECEA1ES330
R371, 372	ERD25TJ680	R484	ERD25TJ473	R670	ERD25TJ181	*For Australia.	ERG12ANJ122	R980, 981	ERD25TJ473	C25, 26, 27, 28	ECQM05182KZ	C237, 238	ECEA1ES470
R373, 374	ERD25TJ102	R485	ERD25TJ102	R671	ERD25TJ473	R828	ERX2ANJ47R	R982	ERD25TJ102	C29, 30	ECQS101JZ	C239	ECEA1AS101
R375, 376	ERD25TJ332	R486	ERD25TJ102	R672	ERD25TJ181	R829	ERG12ANJ331	R983	ERD25TJ153	C31, 32	ECQM05472KZ	C240, 241	ECEA1ES101
R377, 378	ERD25TJ222	R488	ERD25TJ102	R673, 674	ERD25TJ273	R830	ERD25TJ222	R984, 985, 986	ERD25TJ102	C33, 34	ECEA25M47R	C242	ECEA1ES101
R379, 380	ERD25TJ224	R489	ERD25TJ471	R675, 676	ERD25TJ331	R831, 852	ERD25TJ393	R987	ERD25TJ102	C35, 36	ECCD1H102K	C243	ECQM05103KZ
R381, 382	ERD25TJ152	R490	ERD25TJ473	R677	ERD25TJ331	R853, 854	ERG12ANJ680	R988	ERD25TJ223	C37, 38	ECEA1AS101	C244	ECQM05103KZ
R383	ERD25TJ472	R491	ERD25TJ471	R678	ERD25TJ103	*For All European areas.	ERG12ANJ560	R989	ERD25TJ222	C39, 40	ECEA1AS101	C245	ECQM05103KZ
R384, 385, 386	ERD25TJ103	R492	ERD25TJ392	R679, 680	ERD25TJ103	*For Australia.	ERG12ANJ560	R990	ERD25TJ103	C41, 42	ECCD1H470K	C246	ECQM05103KZ
R387	ERD25TJ470	R493	ERD25TJ123	R702	ERD25TJ103	R855, 856	ERD25TJ154	R991	ERD25TJ562	C43	ECQM05223KZ	C247	ECQM05223KZ
R388	ERD25TJ332	R494	ERD25TJ472	R703	ERD25TJ560	R857, 858	ERG12ANJ151	R992	ERD25TJ473	C44	ECQM05122KZ	C248	ECQM05122KZ
R389	ERD25TJ102	R495	ERD25TJ473	R704	ERD25TJ103	R859, 860	ERG12ANJ151	R993	ERD25TJ103	C45	ECQM05122KZ	C249	ECQM05122KZ
R401	ERD25TJ562	R496	ERD25TJ102	R705	ERD25TJ560	R859, 860	ERG12ANJ151	R995	ERD25TJ393	C46	ECQM05122KZ	C250	ECQM05122KZ
R402	ERD25TJ101	R497	ERD25TJ104	R706, 707, 708, 709	ERD25TJ103	R859, 860	ERG12ANJ151	R1001, 1002	ERD25TJ682	C47	ECQM05122KZ	C251	ECQM05122KZ
R403	ERD25TJ562	R498	ERD25TJ153	R710, 711, 712, 713, 714, 715	ERD25TJ103	R859, 860	ERG12ANJ151	R1003, 1004	ERD25TJ473	C48	ECQM05122KZ	C252	ECQM05122KZ
R404	ERD25TJ101	R499	ERD25TJ104	R716	ERD25TJ272	R859, 860	ERG12ANJ151	R1005	ERD25TJ102	C49	ECQM05122KZ	C253	ECQM05122KZ
R405	ERD25TJ562	R500	ERD25TJ104	R717, 718	ERD25TJ272	R859, 860	ERG12ANJ151	R1006, 1007	ERD25TJ102	C50	ECQM05122KZ	C254	ECQM05122KZ
R406	ERD25TJ101	R501	ERD25TJ104	R719	ERG12ANJ100	R859, 860	ERG12ANJ151	R1008, 1009	ERD25TJ102	C51	ECQM05122KZ	C255	ECQM05122KZ
R407	ERD25TJ562	R502	ERD25TJ104	R720	ERD25TJ182	R859, 860	ERG12ANJ151	R1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017	ERD25TJ102	C52	ECQM05122KZ	C256	ECQM05122KZ
R408	ERD25TJ101	R503	ERD25TJ104	R721	ERX12ANJ56R	R859, 860	ERG12ANJ151	R1012, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033	ERD25TJ102	C53	ECQM05122KZ	C257	ECQM05122KZ
R409	ERD25TJ562	R504	ERD25TJ104	R722	ERD25TJ182	R859, 860	ERG12ANJ151	R1013, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C54	ECQM05122KZ	C258	ECQM05122KZ
R410	ERD25TJ101	R505	ERD25TJ104	R723	ERD25TJ182	R859, 860	ERG12ANJ151	R1014, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C55	ECQM05122KZ	C259	ECQM05122KZ
R411	ERD25TJ562	R506	ERD25TJ104	R724	ERD25TJ182	R859, 860	ERG12ANJ151	R1015, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C56	ECQM05122KZ	C260	ECQM05122KZ
R412	ERD25TJ101	R507	ERD25TJ104	R725	ERD25TJ182	R859, 860	ERG12ANJ151	R1016, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C57	ECQM05122KZ	C261	ECQM05122KZ
R414	ERD25TJ331	R508	ERD25TJ104	R726	ERD25TJ182	R859, 860	ERG12ANJ151	R1017, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C58	ECQM05122KZ	C262	ECQM05122KZ
R415	ERD25TJ272	R509	ERD25TJ104	R727	ERD25TJ182	R859, 860	ERG12ANJ151	R1018, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C59	ECQM05122KZ	C263	ECQM05122KZ
R416	ERD25TJ332	R510	ERG12ANJ222	R728	ERD25TJ182	R859, 860	ERG12ANJ151	R1019, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C60	ECQM05122KZ	C264	ECQM05122KZ
R418	ERD25TJ272	R511	ERG12ANJ222	R729	ERD25TJ182	R859, 860	ERG12ANJ151	R1020, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C61	ECQM05122KZ	C265	ECQM05122KZ
R419, 421	ERD25TJ332	R512	ERG12ANJ222	R730	ERD25TJ182	R859, 860	ERG12ANJ151	R1021, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C62	ECQM05122KZ	C266	ECQM05122KZ
R422	ERD25TJ272	R513	ERG12ANJ222	R731	ERD25TJ182	R859, 860	ERG12ANJ151	R1022, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C63	ECQM05122KZ	C267	ECQM05122KZ
R423, 424, 425	ERD25TJ473	R514	ERG12ANJ222	R732	ERD25TJ182	R859, 860	ERG12ANJ151	R1023, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C64	ECQM05122KZ	C268	ECQM05122KZ
R426, 428, 429, 430	ERD25TJ273	R515	ERG12ANJ222	R733	ERD25TJ182	R859, 860	ERG12ANJ151	R1024, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C65	ECQM05122KZ	C269	ECQM05122KZ
R431	ERD25TJ153	R516	ERG12ANJ222	R734	ERD25TJ182	R859, 860	ERG12ANJ151	R1025, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C66	ECQM05122KZ	C270	ECQM05122KZ
R433, 434	ERD25TJ473	R517	ERG12ANJ222	R735	ERD25TJ182	R859, 860	ERG12ANJ151	R1026, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C67	ECQM05122KZ	C271	ECQM05122KZ
R435	ERD25TJ562	R518	ERG12ANJ222	R736	ERD25TJ182	R859, 860	ERG12ANJ151	R1027, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C68	ECQM05122KZ	C272	ECQM05122KZ
R436	ERD25TJ103	R519	ERG12ANJ222	R737	ERD25TJ182	R859, 860	ERG12ANJ151	R1028, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C69	ECQM05122KZ	C273	ECQM05122KZ
R437	ERD25TJ473	R520	ERG12ANJ222	R738	ERD25TJ182	R859, 860	ERG12ANJ151	R1029, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C70	ECQM05122KZ	C274	ECQM05122KZ
R438	ERD25TJ183	R521	ERG12ANJ222	R739	ERD25TJ182	R859, 860	ERG12ANJ151	R1030, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C71	ECQM05122KZ	C275	ECQM05122KZ
R439	ERD25TJ681	R522	ERG12ANJ222	R740	ERD25TJ182	R859, 860	ERG12ANJ151	R1031, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C72	ECQM05122KZ	C276	ECQM05122KZ
R440	ERD25TJ153	R523	ERG12ANJ222	R741	ERD25TJ182	R859, 860	ERG12ANJ151	R1032, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C73	ECQM05122KZ	C277	ECQM05122KZ
R441, 442	ERD25TJ562	R524	ERG12ANJ222	R742	ERD25TJ182	R859, 860	ERG12ANJ151	R1033, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C74	ECQM05122KZ	C278	ECQM05122KZ
R443	ERD25TJ473	R525	ERG12ANJ222	R743	ERD25TJ182	R859, 860	ERG12ANJ151	R1034, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C75	ECQM05122KZ	C279	ECQM05122KZ
R444	ERD25TJ103	R526	ERG12ANJ222	R744	ERD25TJ182	R859, 860	ERG12ANJ151	R1035, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C76	ECQM05122KZ	C280	ECQM05122KZ
R445	ERD25TJ331	R527	ERG12ANJ222	R745	ERD25TJ182	R859, 860	ERG12ANJ151	R1036, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C77	ECQM05122KZ	C281	ECQM05122KZ
R446	ERD25TJ153	R528	ERG12ANJ222	R746	ERD25TJ182	R859, 860	ERG12ANJ151	R1037, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C78	ECQM05122KZ	C282	ECQM05122KZ
R447, 448	ERD25TJ331	R529	ERG12ANJ222	R747	ERD25TJ182	R859, 860	ERG12ANJ151	R1038, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C79	ECQM05122KZ	C283	ECQM05122KZ
R449	ERD25TJ473	R530	ERG12ANJ222	R748	ERD25TJ182	R859, 860	ERG12ANJ151	R1039, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C80	ECQM05122KZ	C284	ECQM05122KZ
R450	ERD25TJ103	R531	ERG12ANJ222	R749	ERD25TJ182	R859, 860	ERG12ANJ151	R1040, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C81	ECQM05122KZ	C285	ECQM05122KZ
R451, 453	ERD25TJ473	R532	ERG12ANJ222	R750	ERD25TJ182	R859, 860	ERG12ANJ151	R1041, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C82	ECQM05122KZ	C286	ECQM05122KZ
R454	ERD25TJ473	R533	ERG12ANJ222	R751	ERD25TJ182	R859, 860	ERG12ANJ151	R1042, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C83	ECQM05122KZ	C287	ECQM05122KZ
R455	ERD25TJ821	R534	ERG12ANJ222	R752	ERD25TJ182	R859, 860	ERG12ANJ151	R1043, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C84	ECQM05122KZ	C288	ECQM05122KZ
R456	ERD25TJ473	R535	ERG12ANJ222	R753	ERD25TJ182	R859, 860	ERG12ANJ151	R1044, 1035, 1036, 1037, 1038, 1039	ERD25TJ102	C85	ECQM05122KZ	C289	ECQM05122KZ
R457	ERD25TJ472	R536	ERG12ANJ222	R754	ERD25TJ182	R859, 860	ERG12ANJ151	R1045, 1035, 1036, 1037, 1038, 1039					

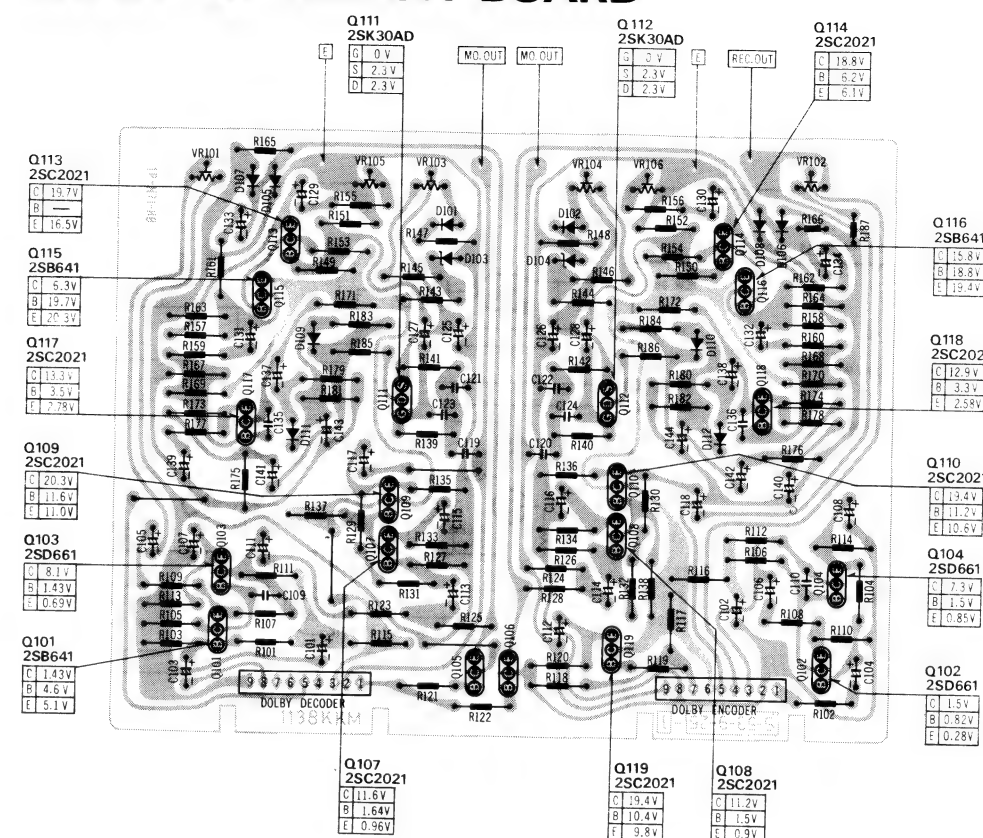
BIAS OSCILLATION CIRCUIT BOARD



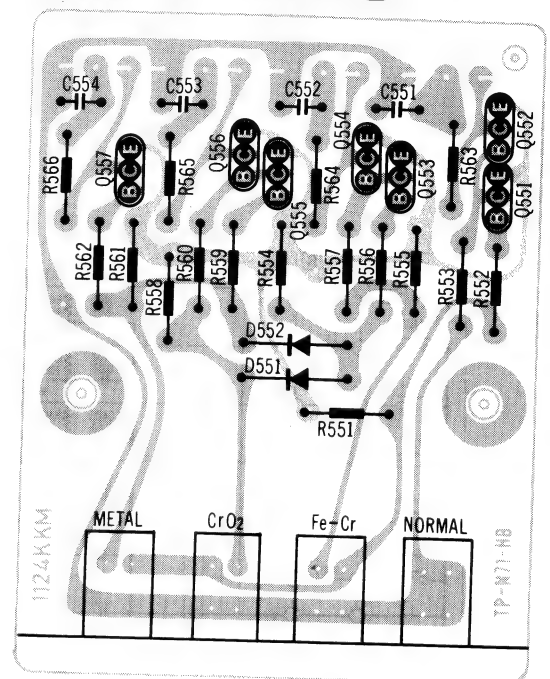
PLAYBACK EQUALIZER/TEST OSCILLATOR/MIC AMP CIRCUIT BOARD



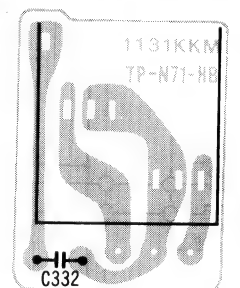
DOLBY NR CIRCUIT BOARD



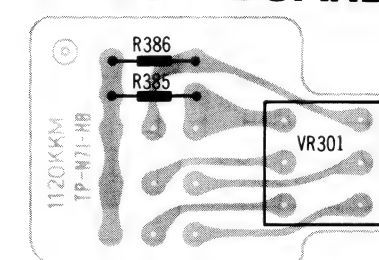
TAPE SELECT CIRCUIT BOARD



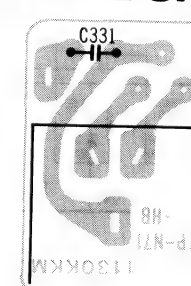
MIC JACK CIRCUIT BOARD



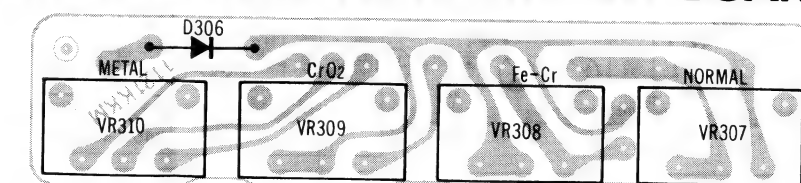
INPUT LEVEL CIRCUIT BOARD



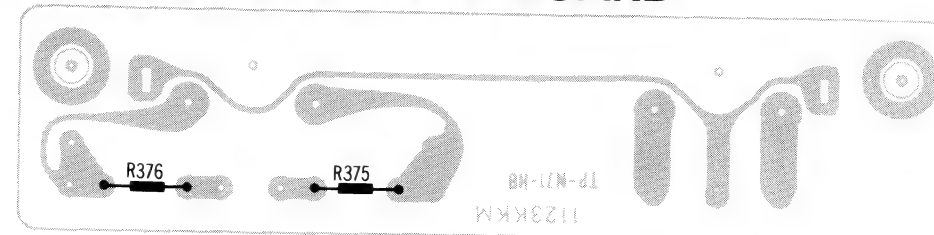
HEADPHONES JACK CIRCUIT BOARD



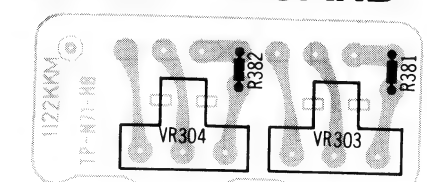
BIAS ADJUSTMENT CIRCUIT BOARD



MAIN JACK CIRCUIT BOARD



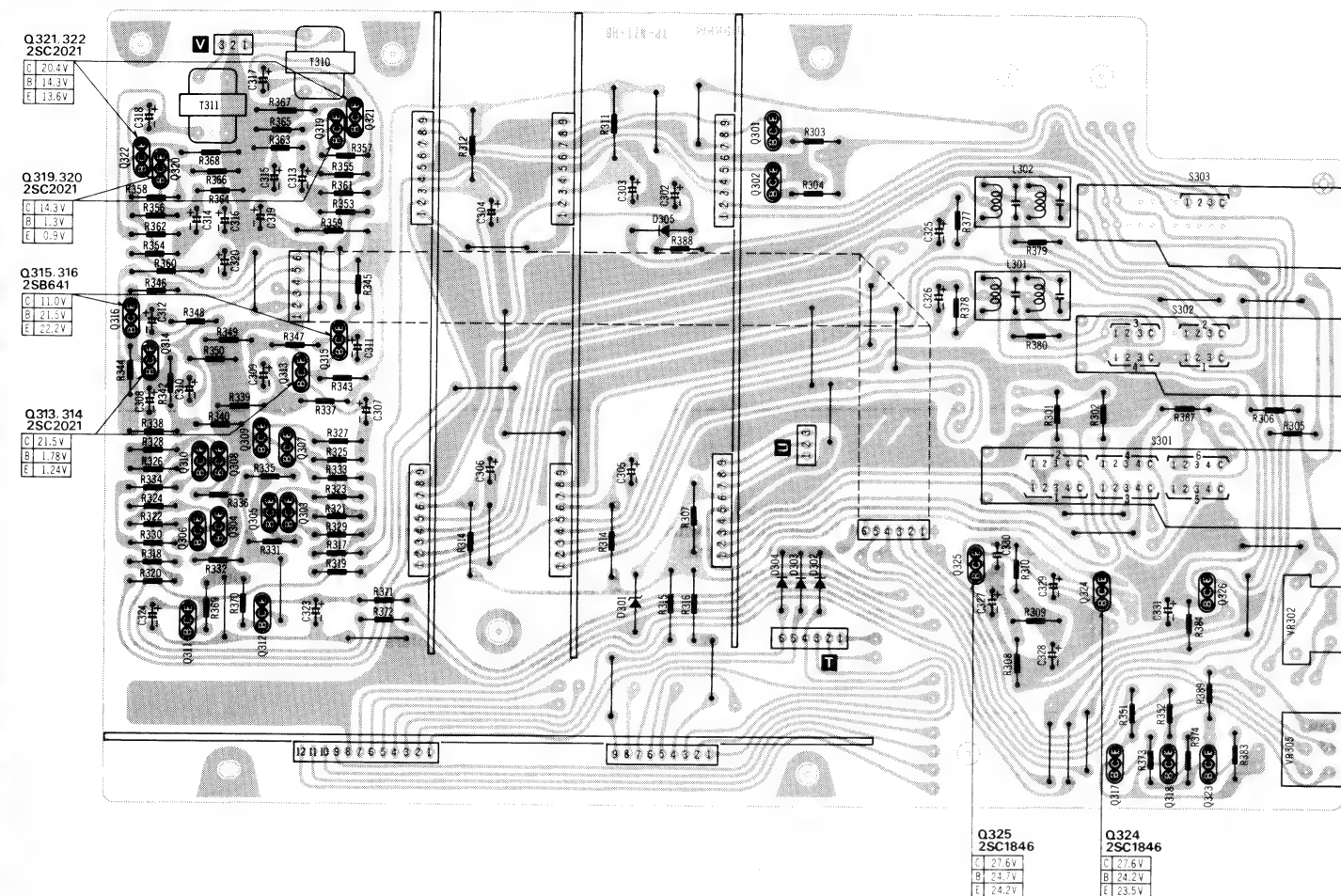
RECORDING CALIBRATION CIRCUIT BOARD



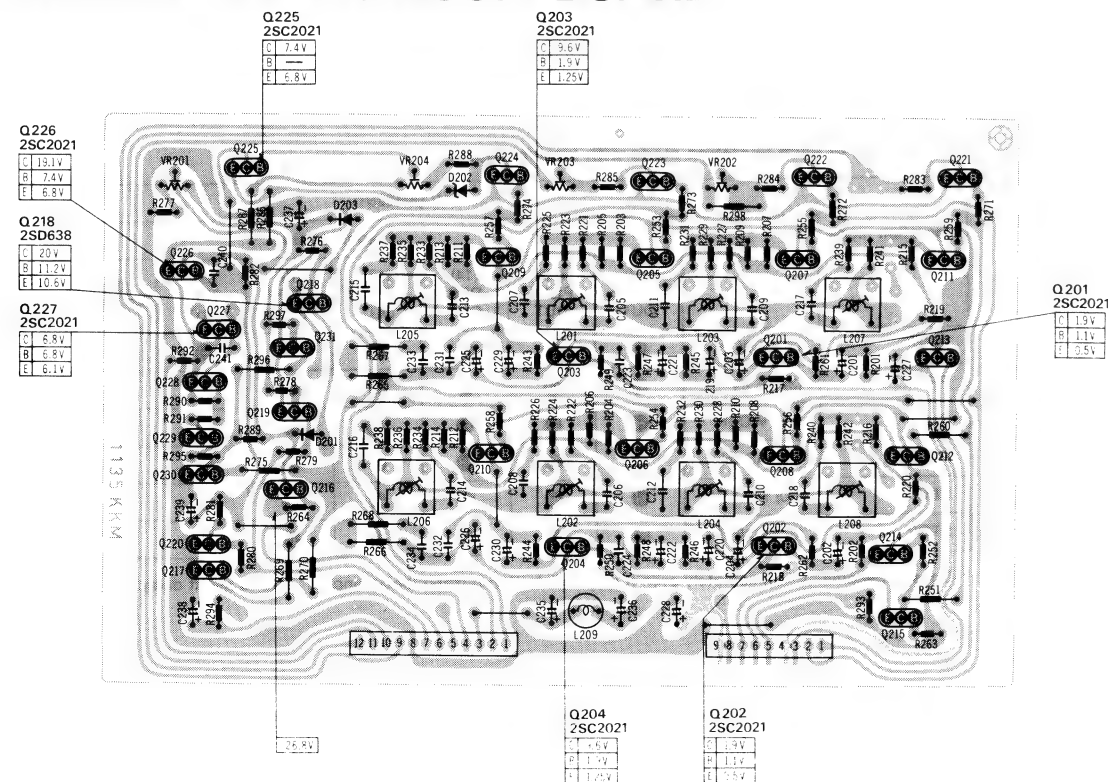
NOTE:
The circuit shown in red on the conductor is +B (bias) circuit. Values indicated in are DC voltage between the chassis and electrical parts.

CIRCUIT BOARD

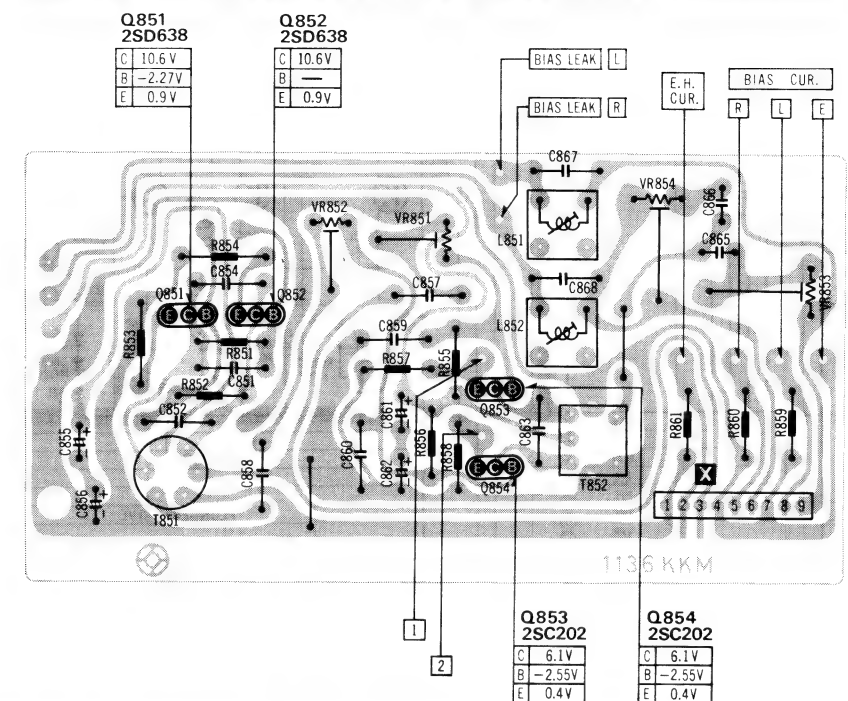
MAIN AMP CIRCUIT BOARD



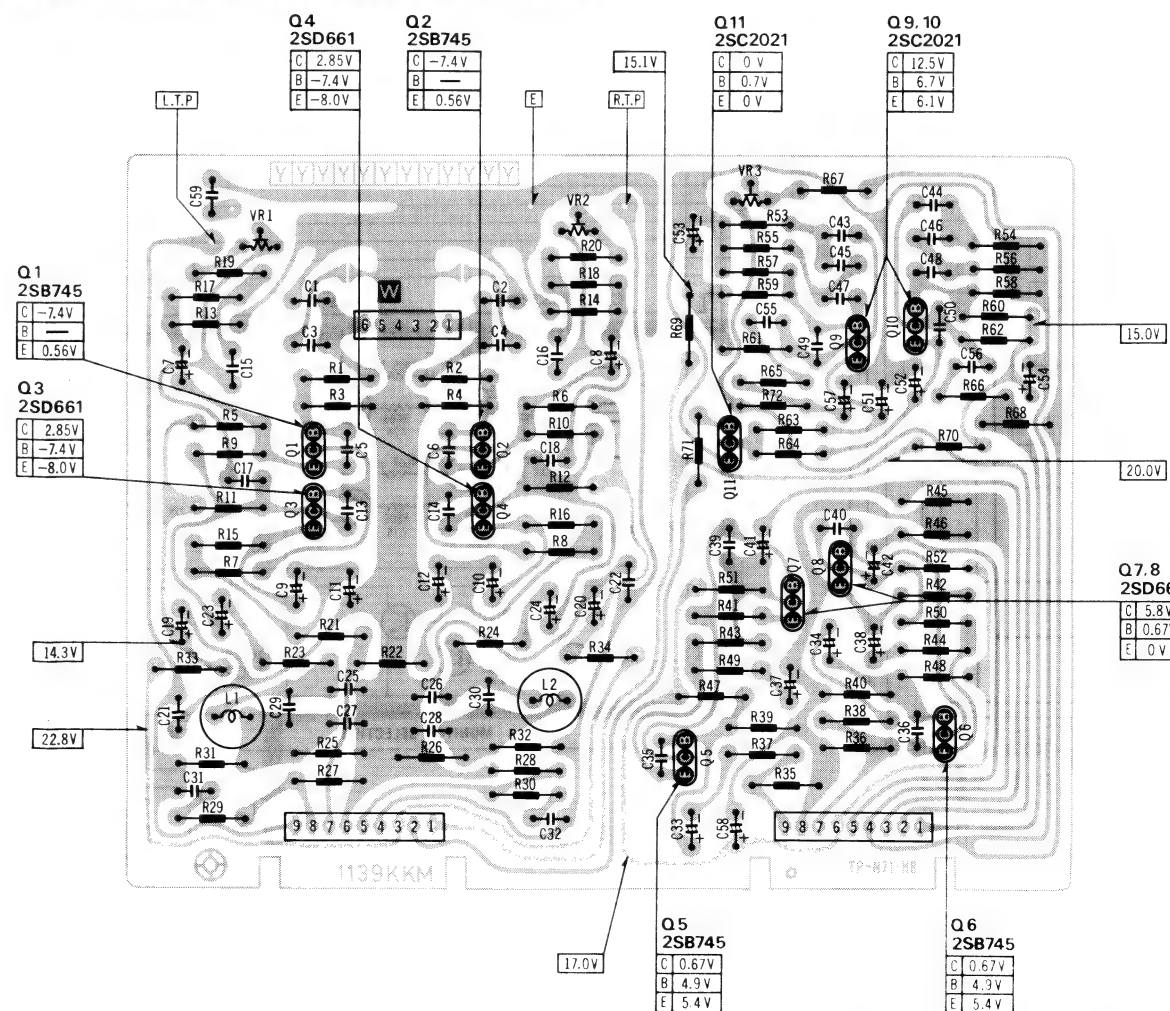
RECORD AMP CIRCUIT BOARD



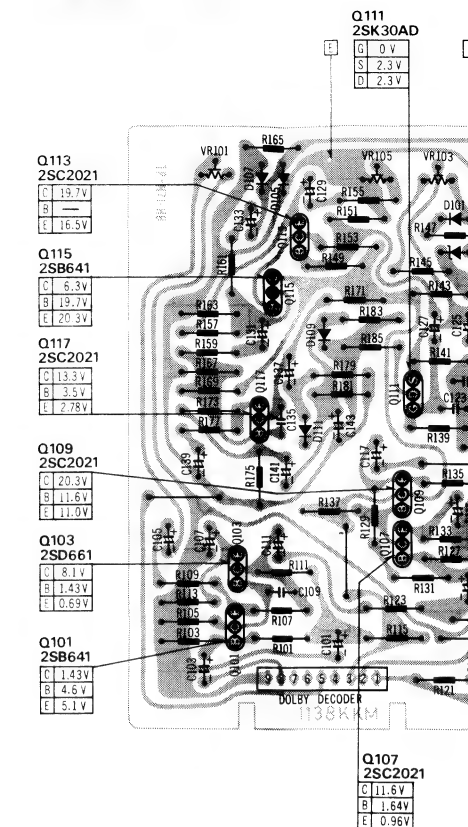
BIAS OSCILLATION CIRCUIT BOARD



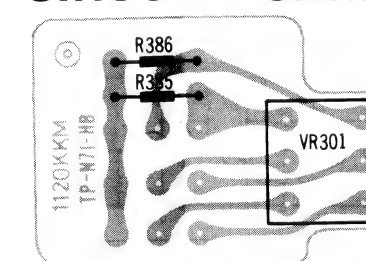
PLAYBACK EQUALIZER/TEST OSCILLATOR/ MIC AMP CIRCUIT BOARD



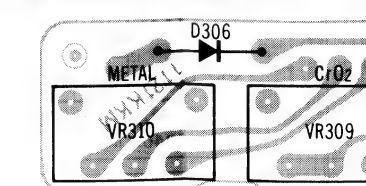
DOLBY NR CIRCUIT



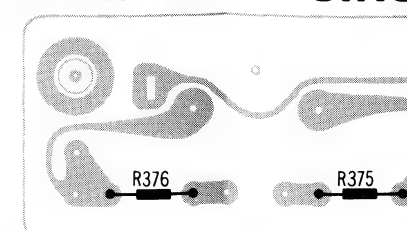
INPUT LEVEL CIRCUIT BOARD

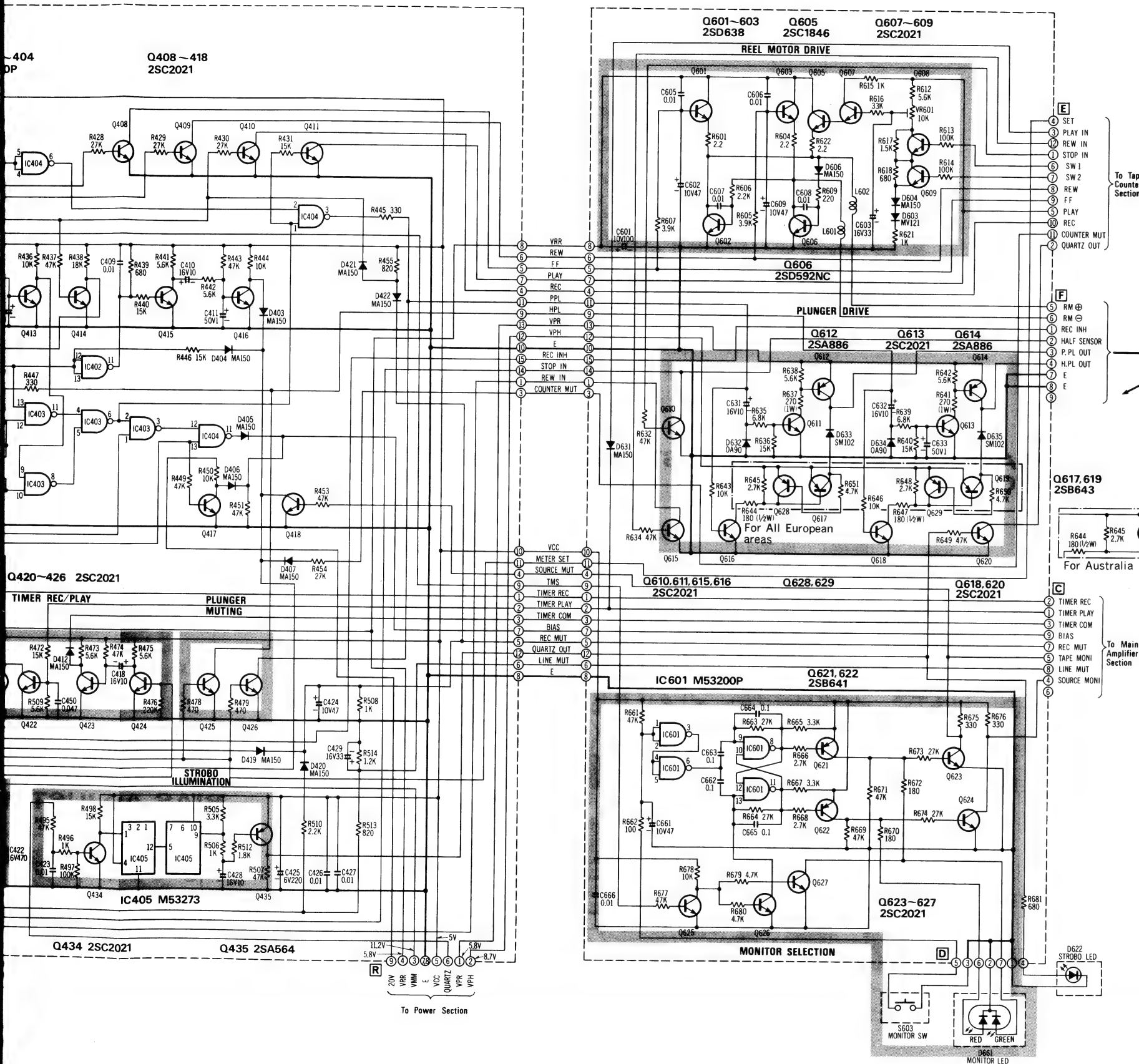


BIAS ADJUSTM



MAIN JACK CIRCUIT





NOTE:

1. S401.....Rewind button switch.
2. S402.....Fast forward button switch.
3. S403.....Playback button switch.
4. S404.....Pause button switch.
5. S405.....Record button switch.
6. S406.....Stop button switch.
7. S407.....Record muting switch.
8. S601.....Cassette detection switch.
9. S602.....Accidental erase prevention switch.
10. S603.....Monitor select switch.
11. VR601.....Playback tape tension adjustment VR.
12. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000 Ω .
13. Capacity are in microfarads (μ F) unless specified otherwise. P=Pico-farads.

Relationship of each operation mode with input/output

Operation mode	Input Terminal	IC (AN6251)							
		(12) PAUSE OUT	(13) PLAY OUT	(14) REC OUT	(17) D-PLAY OUT	(19) STOP OUT	(20) TMS OUT	(22) FF OUT	(23) REW OUT
REW	(2) REW IN	●	●	●	●	●	●	●	●
FF	(3) FF IN	●	●	●	●	●	●	●	●
PLAY	(8) FWD IN	●	●	●	●	●	●	●	●
PAUSE	(9) PAS IN	●	●	●	●	●	●	●	●
REC	(10) REC IN	●	●	●	●	●	●	●	●
STOP	(6) STOP IN	●	●	●	●	●	●	●	●

* Doesn't become "L" immediately even if playback button pushed: becoming "L" after a slight delay.

Q601~603 2SD638 **Q605 2SC1846** **Q607~609 2SC2021**

REEL MOTOR DRIVE

Q606 2SD592NC

PLUNGER DRIVE

Q612 2SA886 **Q613 2SC2021** **Q614 2SA886**

Q610, 611, 615, 616 2SC2021 **Q628, 629** **Q618, 620 2SC2021**

IC 601 M53200P **Q621, 622 2SB641**

Q623~627 2SC2021

MONITOR SELECTION

Q617, 619 2SB643

For All European areas

For Australia

SET **PLAY IN** **REW IN** **STOP IN** **SW 1** **SW 2** **REW** **FF** **PLAY** **REC** **COUNTER MUT** **QUARTZ OUT**

RM **RM INH** **HALF SENSOR** **P.P.L OUT** **H.P.L OUT** **E** **E**

TIMER REC **TIMER PLAY** **TIMER COM** **BIAS** **REC MUT** **TAPE MONI** **LINE MUT** **SOURCE MONI**

RED **GREEN**

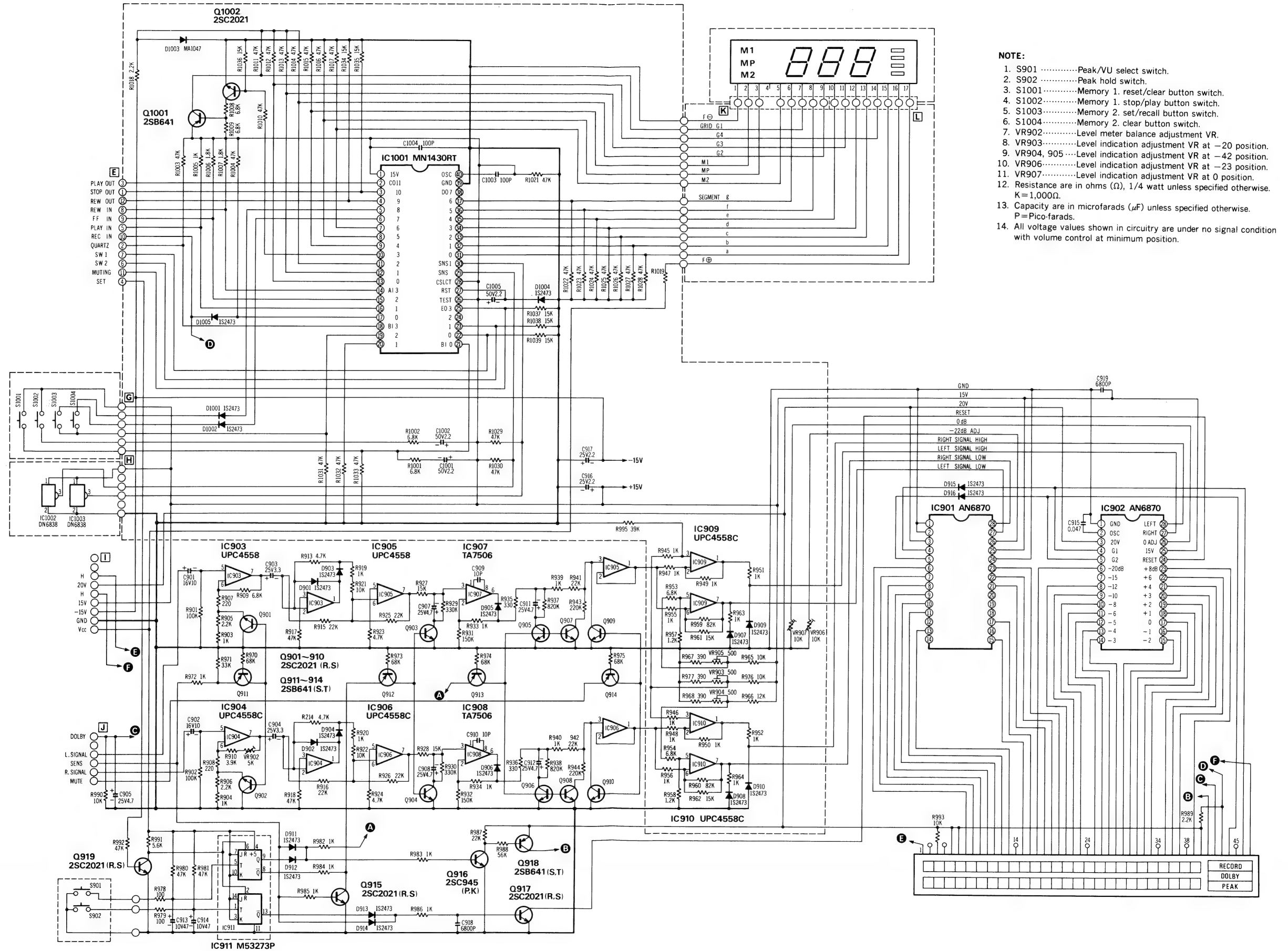
Q601 **Q602** **Q603** **Q604** **Q605** **Q606** **Q607** **Q608** **Q609** **Q610** **Q611** **Q612** **Q613** **Q614** **Q615** **Q616** **Q617** **Q618** **Q619** **Q620** **Q621** **Q622** **Q623** **Q624** **Q625** **Q626** **Q627**

R601 **R602** **R603** **R604** **R605** **R606** **R607** **R608** **R609** **R610** **R611** **R612** **R613** **R614** **R615** **R616** **R617** **R618** **R619** **R620** **R621** **R622** **R623** **R624** **R625** **R626** **R627** **R628** **R629** **R630** **R631** **R632** **R633** **R634** **R635** **R636** **R637** **R638** **R639** **R640** **R641** **R642** **R643** **R644** **R645** **R646** **R647** **R648** **R649** **R650** **R651** **R652** **R653** **R654** **R655** **R656** **R657** **R658** **R659** **R660** **R661** **R662** **R663** **R664** **R665** **R666** **R667** **R668** **R669** **R670** **R671** **R672** **R673** **R674** **R675** **R676** **R677** **R678** **R679** **R680** **R681**

C601 **C602** **C603** **C604** **C605** **C606** **C607** **C608** **C609** **C610** **C611** **C612** **C613** **C614** **C615** **C616** **C617** **C618** **C619** **C620** **C621** **C622** **C623** **C624** **C625** **C626** **C627** **C628** **C629** **C630** **C631** **C632** **C633** **C634** **C635** **C636** **C637** **C638** **C639** **C640** **C641** **C642** **C643** **C644** **C645** **C646** **C647** **C648** **C649** **C650** **C651** **C652** **C653** **C654** **C655** **C656** **C657** **C658** **C659** **C660** **C661** **C662** **C663** **C664** **C665** **C666**

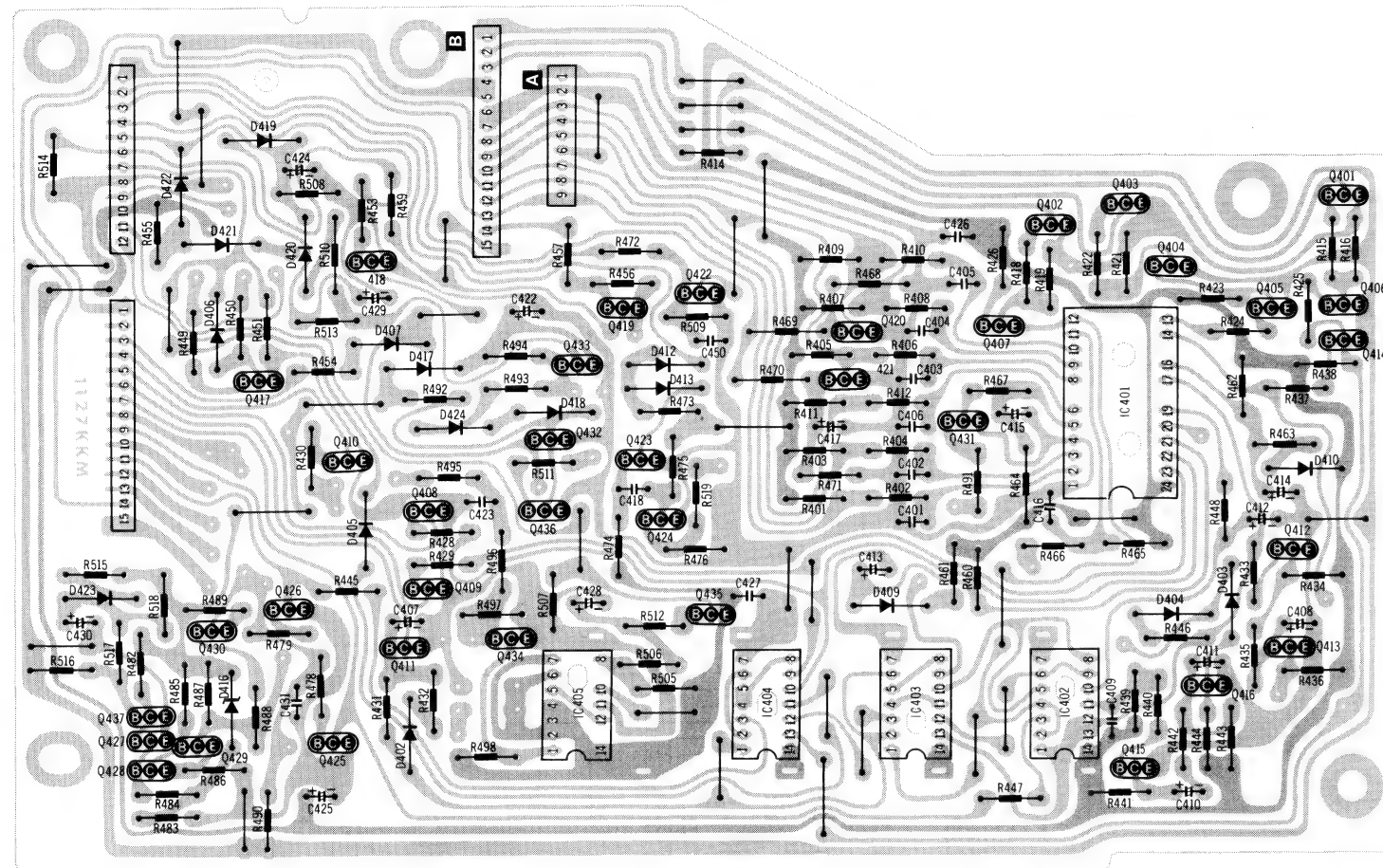
D601 **D602** **D603** **D604** **D605** **D606** **D607** **D608** **D609** **D610** **D611** **D612** **D613** **D614** **D615** **D616** **D617** **D618** **D619** **D620** **D621** **D622** **D623** **D624** **D625** **D626** **D627** **D628** **D629** **D630** **D631** **D632** **D633** **D634** **D635** **D636** **D637** **D638** **D639** **D640** **D641** **D642** **D643** **D644** **D645** **D646** **D647** **D648** **D649** **D650** **D651** **D652** **D653** **D654** **D655** **D656** **D657** **D658** **D659** **D660** **D661** **D662** **D663** **D664** **D665** **D666** **D667** **D668** **D669** **D670** **D671** **D672** **D673** **D674** **D675** **D676** **D677** **D678** **D679** **D680** **D681**

SCHEMATIC DIAGRAM TAPE COUNTER AND LEVEL METER SECTION

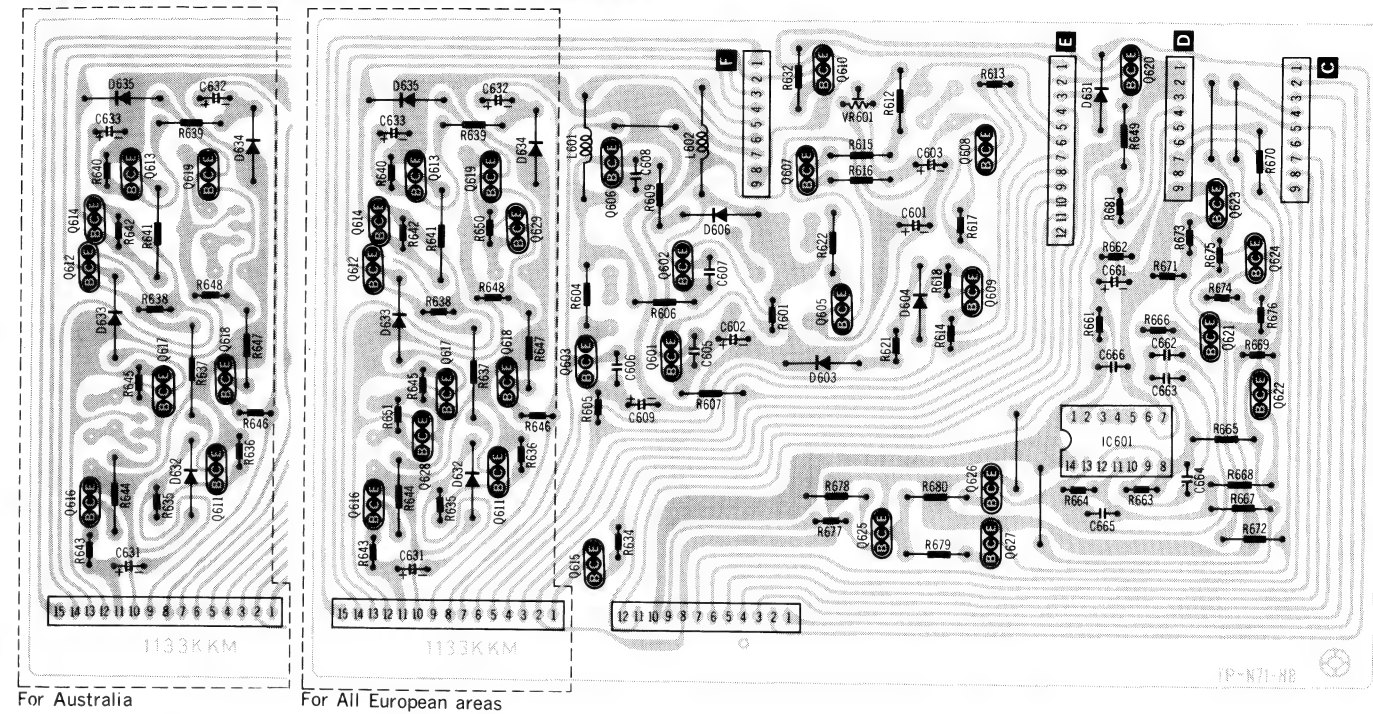


CIRCUIT BOARD

MAIN CONTROL CIRCUIT BOARD



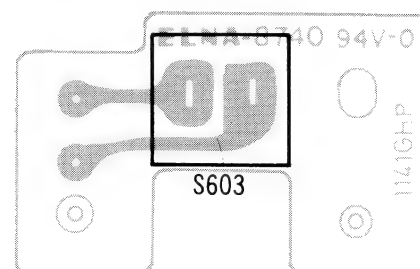
REEL MOTOR/PLUNGER/MONITOR SELECTION CIRCUIT BOARD



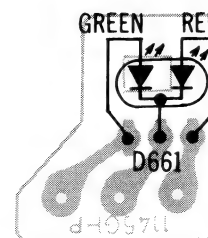
QUARTZ STROBO CIRCUIT BOARD



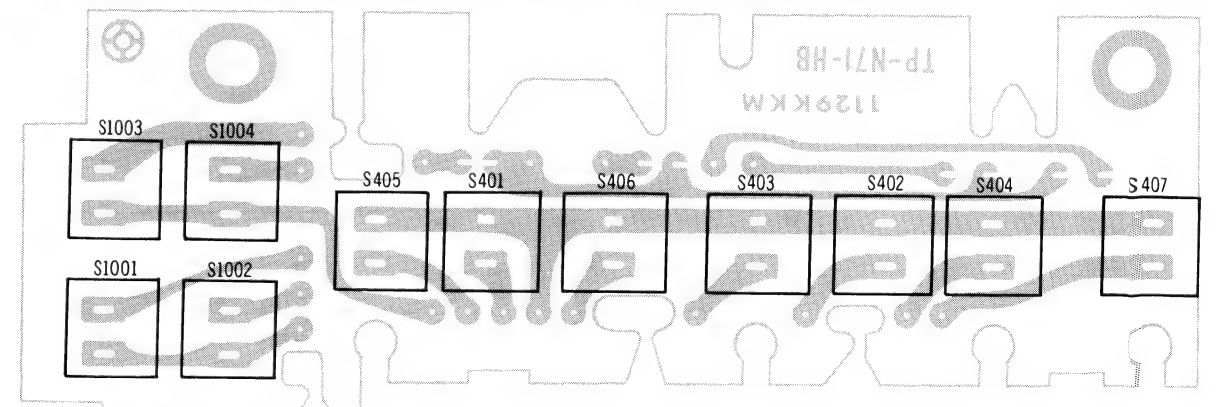
MONITOR SELECT CIRCUIT BOARD



LED MONITOR INDICATOR CIRCUIT BOARD



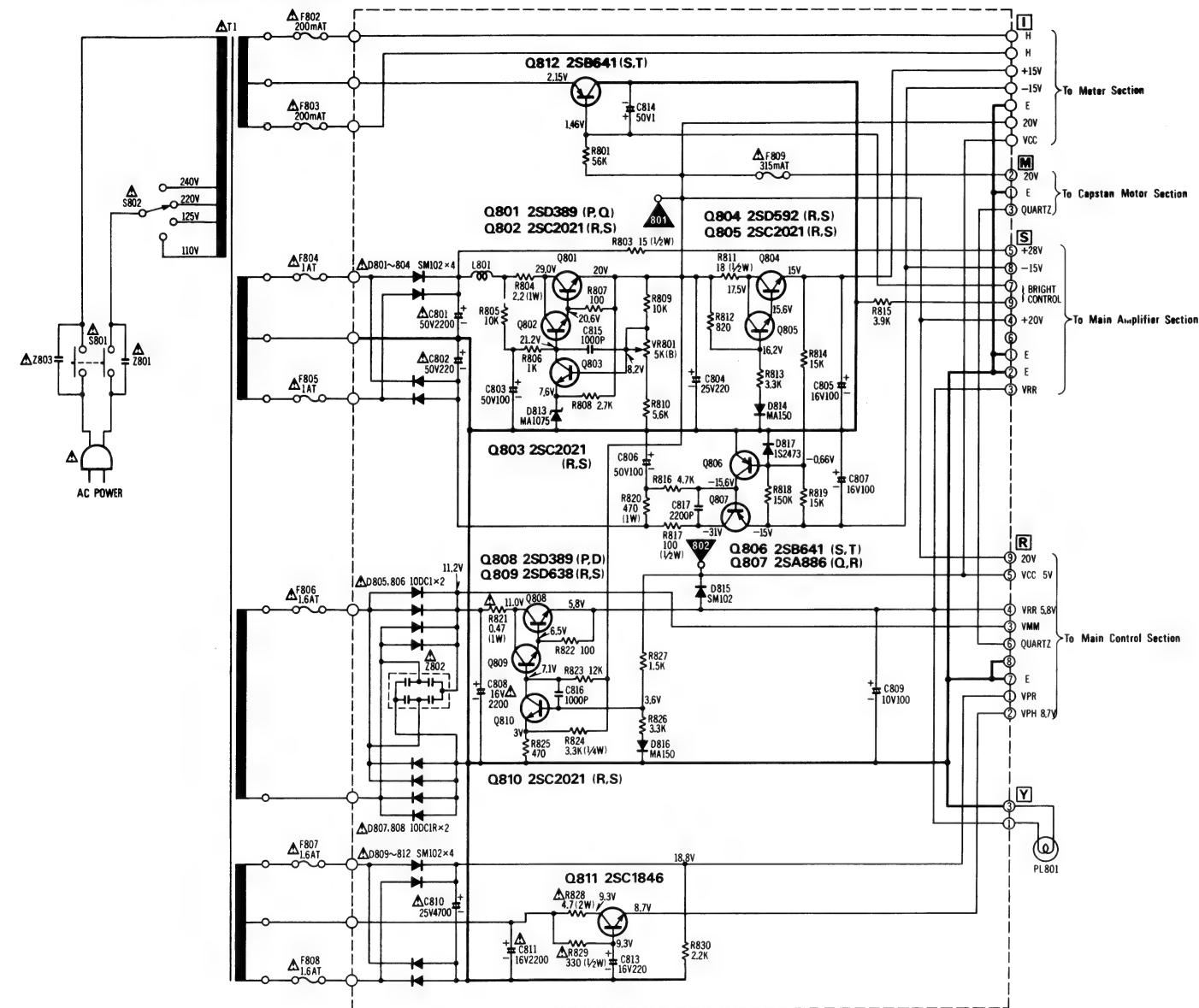
OPERATION SWITCH CIRCUIT BOARD



NOTE:
The circuit shown in red on the conductor is +B (bias) circuit.

SCHEMATIC DIAGRAM POWER SECTION

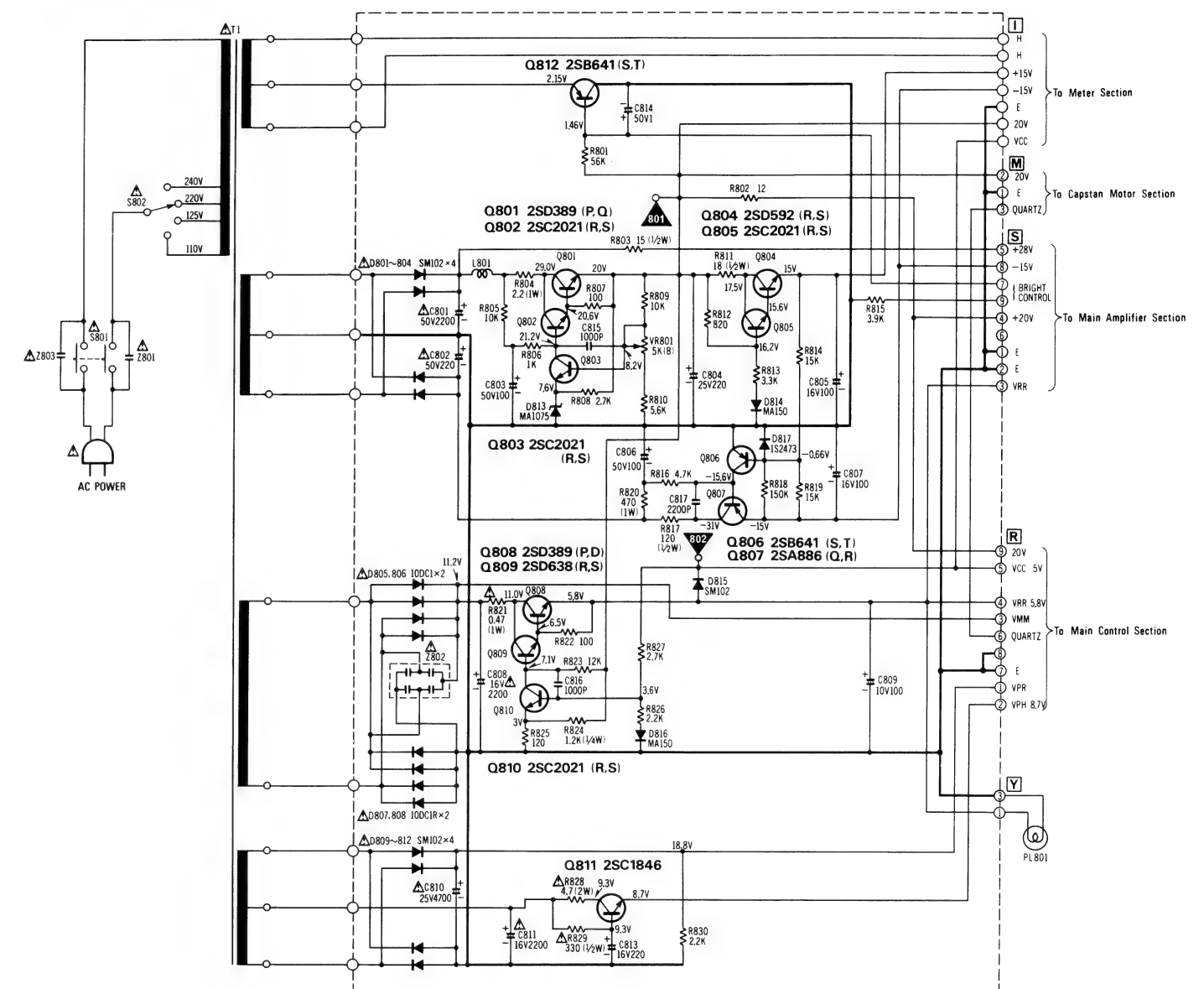
For All European areas.



NOTE:

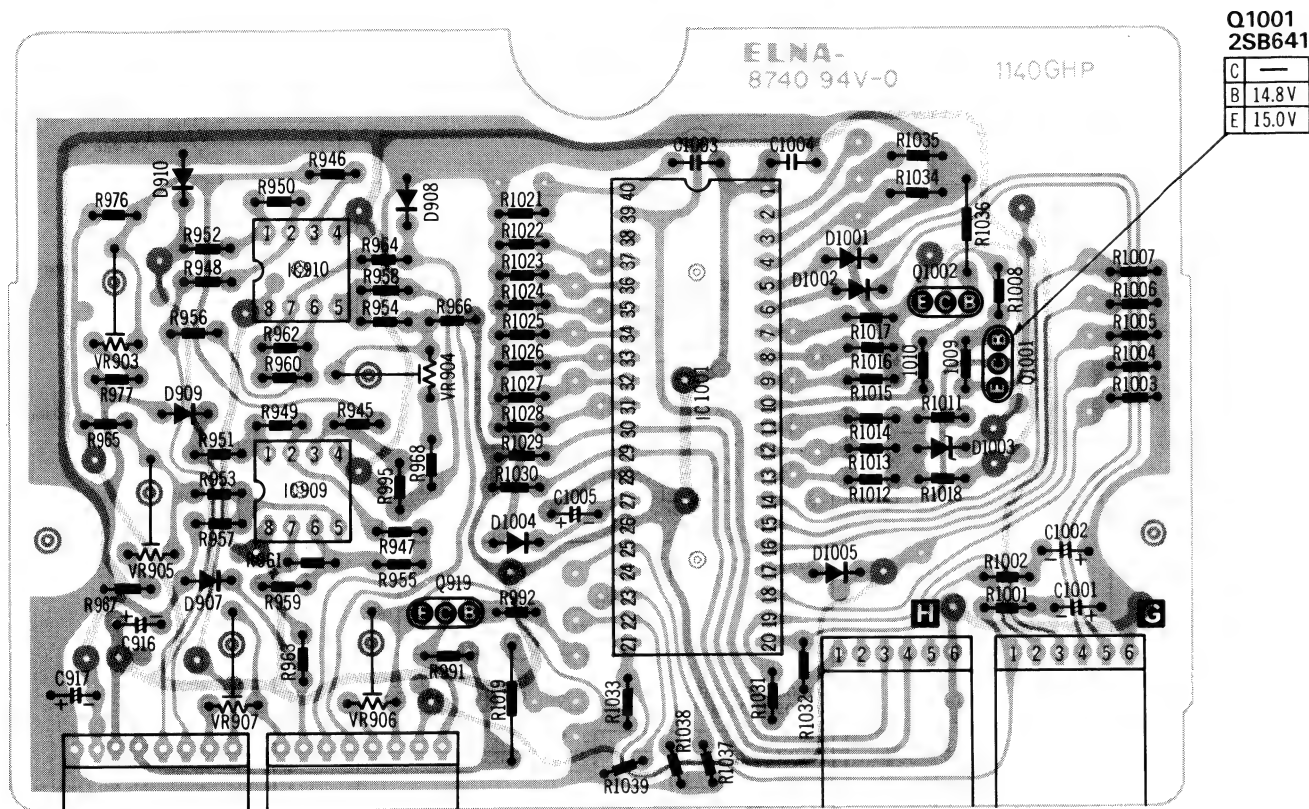
1. S801.....Power ON/OFF switch.
2. S802.....AC power voltage select switch.
3. VR801.....DC voltage (20V) adjustment VR.
4. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
K=1,000 Ω .
5. Capacity are in microfarads (μ F) unless specified otherwise.
P=Pico-farads.
6. All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.
7. Δ indicates that only parts specified by the manufacturer be used for safety.

For Australia

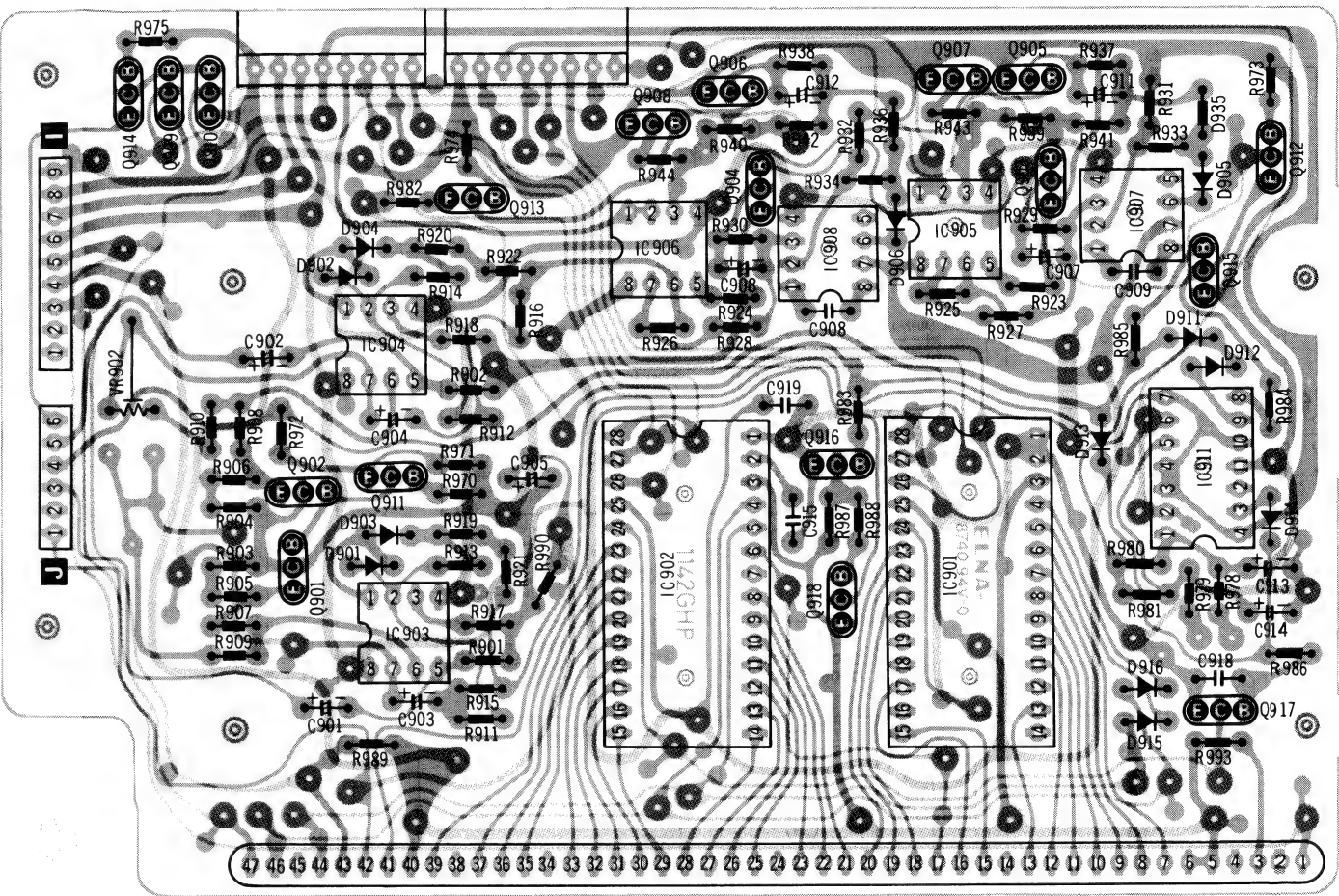


CIRCUIT BOARD

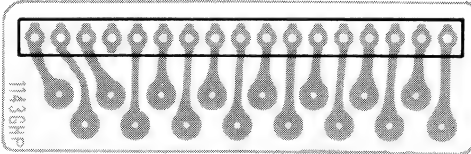
MICRO COMPUTER CIRCUIT BOARD



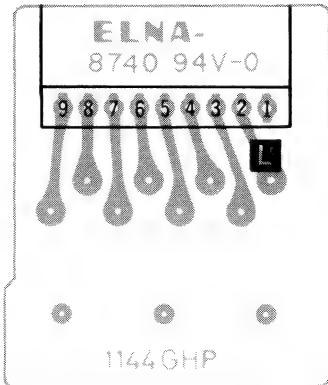
FLUORESCENT LEVEL METER CIRCUIT BOARD



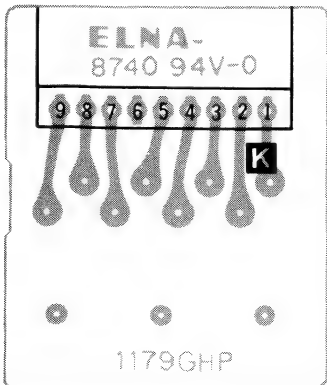
DIGITAL TAPE COUNTER CIRCUIT BOARD



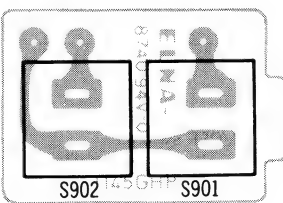
CONNECTOR CIRCUIT BOARD



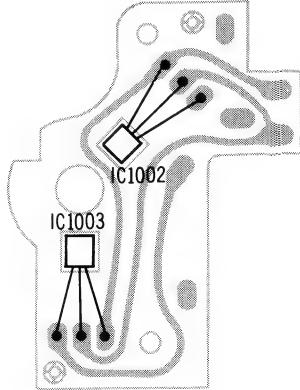
CONNECTOR CIRCUIT BOARD



METER FUNCTION CIRCUIT BOARD

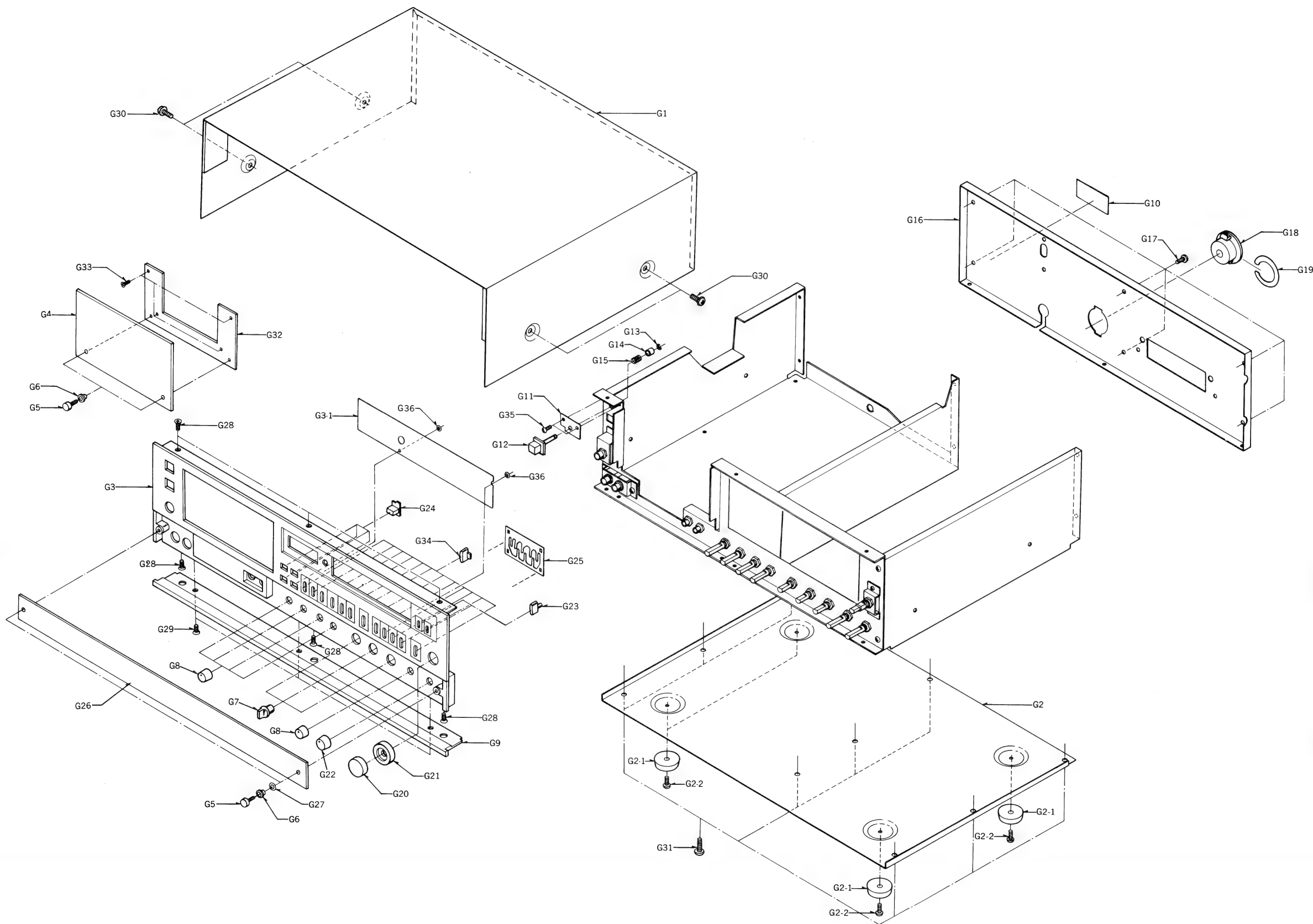


HALL IC CIRCUIT BOARD



NOTE:
The circuit shown in red on the conductor is +B (bias) circuit.
Values indicated in are DC voltage between the chassis and electrical parts.

CABINET PARTS

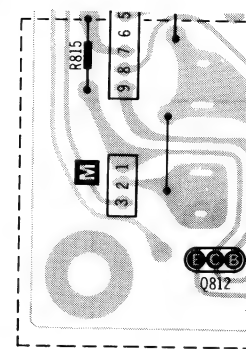


Ref. No.	Part No.	Part Name & Description
CABINET PARTS		
G1	QGC1130	Case Cover
G2	QYB0392	Button Cover Assembly
G2-1	QKA1076	Rubber Foot
G2-2	XSN4+6S	Screw $\varnothing 4 \times 6$
G3	QYP0839	Front Panel Assembly
G3-1	QGL1132	Meter Cover
G4	QKG2804	Cassette Lid
G5	QHQ1272	Cassette Lid Holding Screw
G6	QBG1551	Rubber Cushion
G7	QGT1438	Volume Knob-D
G8	QGT1439	Volume Knob-E
G9	QKG2934	Sub-Plate
G10	QGS2689	Main Name Plate
*For All European areas except United Kingdom.		
☐☐ QGS2690		
*For United Kingdom and Australia.		
G11	QXH0301	Eject Plate
G12	QXS1104	Eject Button
G13	XUC25FT	Stop Ring
G14	QDP1387	Roller
G15	QBC1177	Eject Spring
G16	QMK1816	Back Cover
G17	XTN3+8B	Screw $\varnothing 3 \times 8$
G18	QJS0803X	Remote Control Socket
G19	QMA3445	Socket Angle
G20	QYT0507	Volume Knob-A
G21	QYT0508	Volume Knob-B
G22	QYT0509	Volume Knob-C
G23	QGO1531	Push Button-A
G24	QGO1532	Push Button-B
G25	QBP1836	Plate Spring
G26	QKF6013H	Lower Controls Cover
G27	QBW2046	Snap Washer
G28	XSS3+6S	Screw $\varnothing 3 \times 6$
G29	XSS3+8BVS	Screw $\varnothing 3 \times 8$
G30	XSN4+8S	Screw $\varnothing 4 \times 8$
G31	XTN4+8B	Tapping Screw $\varnothing 4 \times 8$
G32	QKG2944	Cassette Lid Holding Plate
G33	XVE2644FZ	Screw
G34	QGO1553	Push Button-C
G35	XTN3+6B	Tapping Screw $\varnothing 3 \times 6$
G36	QBW2007	Snap Washer
ACCESSORIES		
A1	RP023A	Connection Cord
A2	QFTC305011TZ	Demonstration Tape
A3	QQT2629	Instruction Book
*For All European areas except United Kingdom.		
☐☐ QQT2631		
*For United Kingdom and Australia.		
PACKINGS		
P1	QPN3882	Inside Carton
P2	QPA0476	Cushion-A (LEFT)
P3	QPA0477	Cushion-B (RIGHT)
P4	XZB50X65A04	Poly Bag

CIRCUIT BOARD POWER SECTION SUB-POWER CIRCUIT BOARD

Q801	C 29.0V
2SD389	B 20.6V
	E 20.0V

Q808	C 11.0V
2SD389	B 6.5V
	E 5.8V



For Australia

POWER SUPPLY CIRCUIT BOARD

Q811	C 9.3V
2SC1846	B 9.3V
	E 8.7V

Q802	C 29.0V
2SC2021	B 21.2V
	E 20.6V

Q809	C 11.0V
2SD638	B 7.1V
	E 6.5V

Q810	C 7.1V
2SC1684	B 3.6V
	E 3.0V

1	5.8V
2	8.7V
3	11.2V
4	5.8V
5	5.0V
6	
7	0V
8	0V
9	20V

Q804	C 17.5V
2SD592	B 15.6V
	E 15.0V

For All European areas

Q812	C 0V
2SB641	B 1.46V
	E 2.15V

Q805	C 17.5V
2SC2021	B 16.2V
	E 15.6V

Q806	C -15.6V
2SB641	B -0.66V
	E 0V

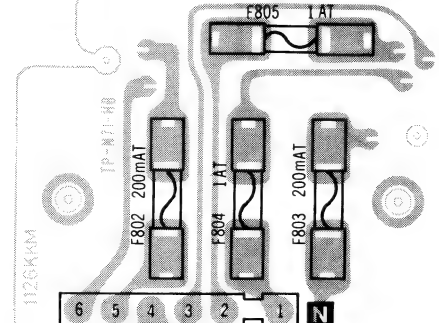
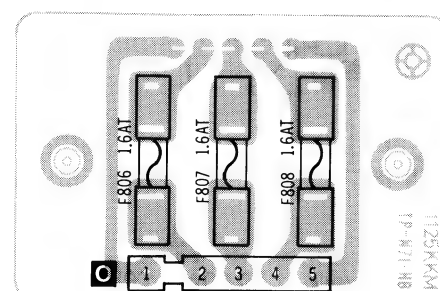
Q807	C -31.0V
2SA886	B -15.6V
	E -15.0V

Q803	C 21.2V
2SC2021	B 8.2V
	E 7.6V

NOTE:

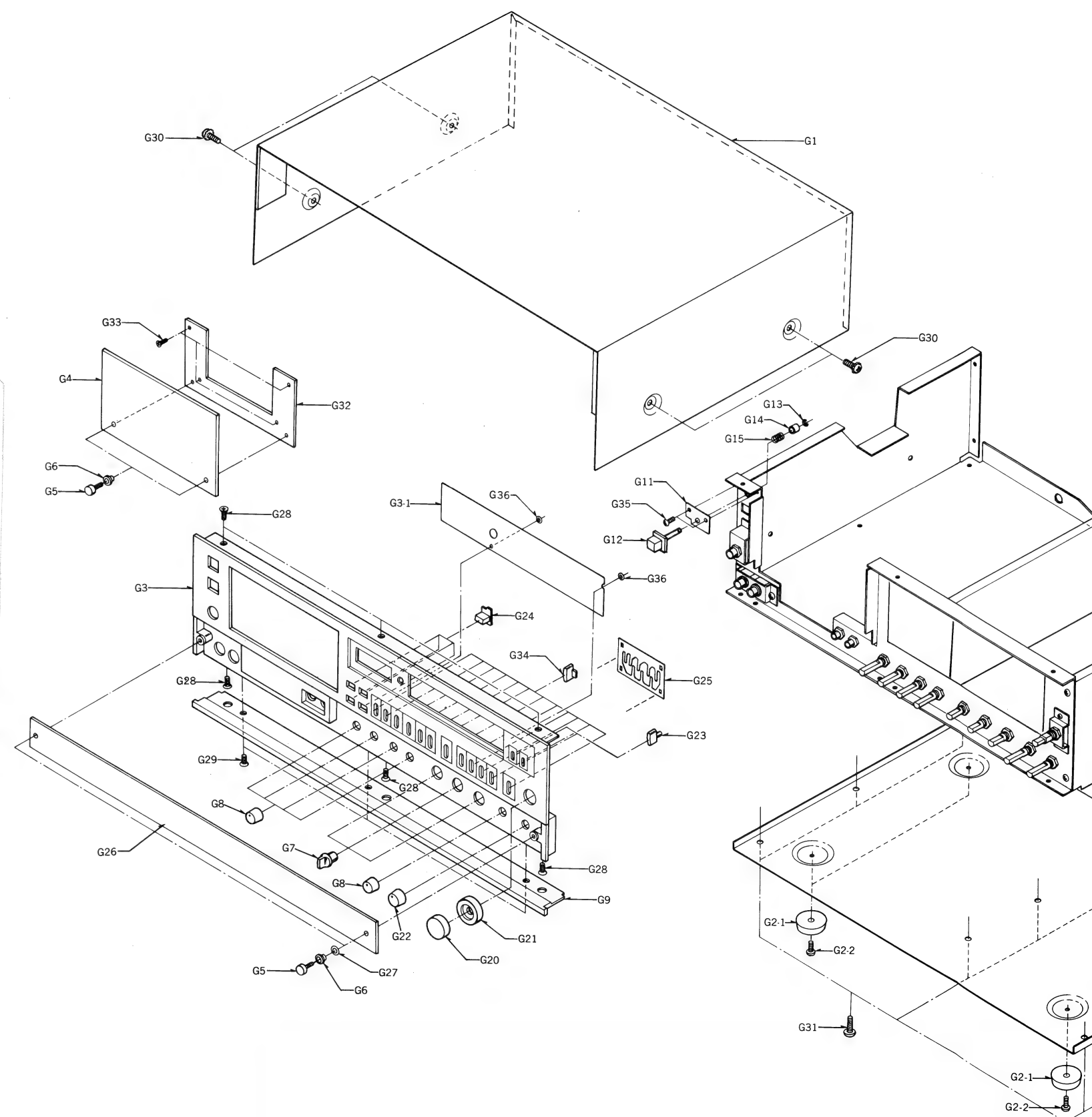
The circuit shown in red on the conductor is +B (bias) circuit. Values indicated in are DC voltage between the chassis and electrical parts.

FUSE CIRCUIT BOARD FUSE CIRCUIT BOARD

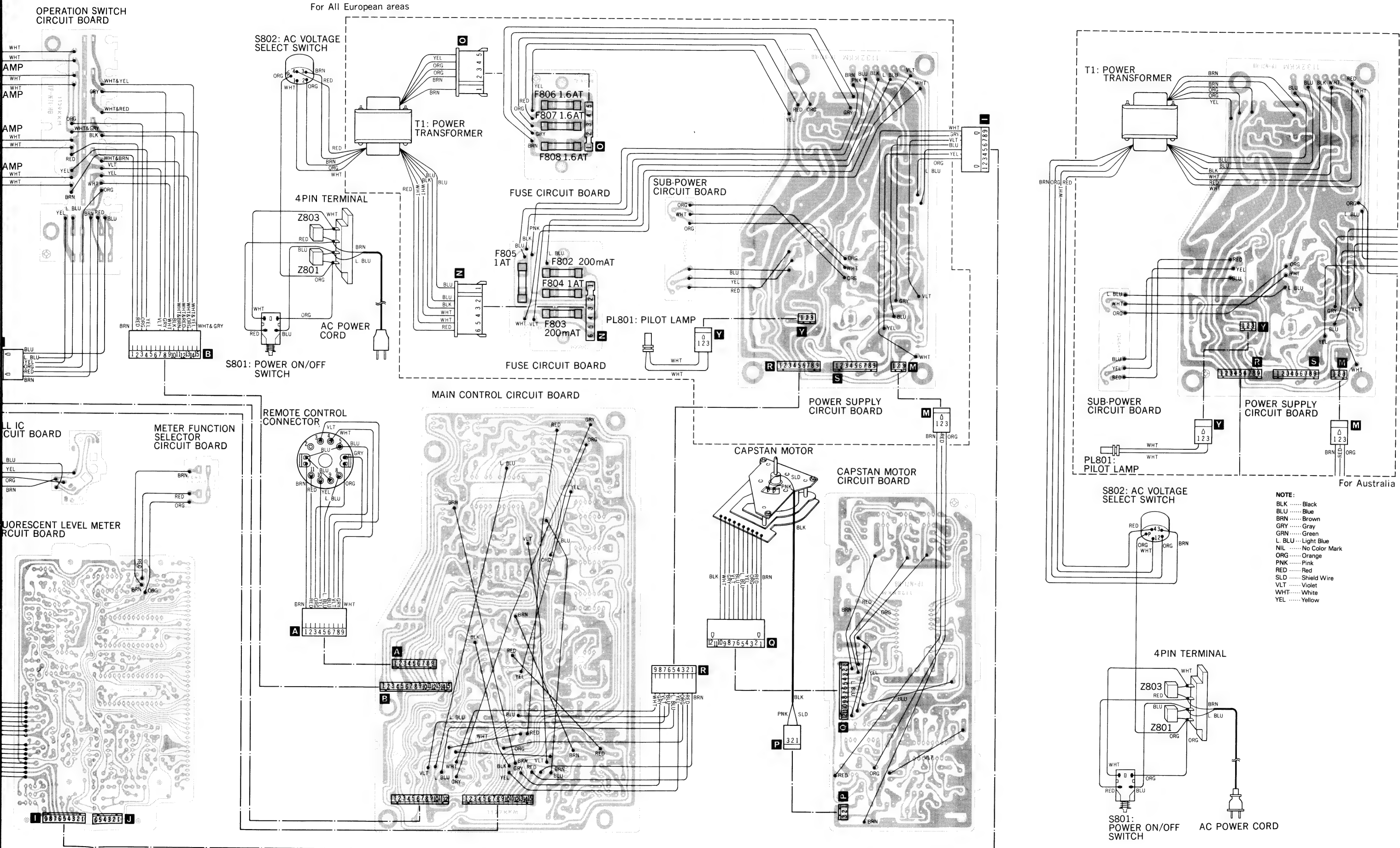


For All European areas.

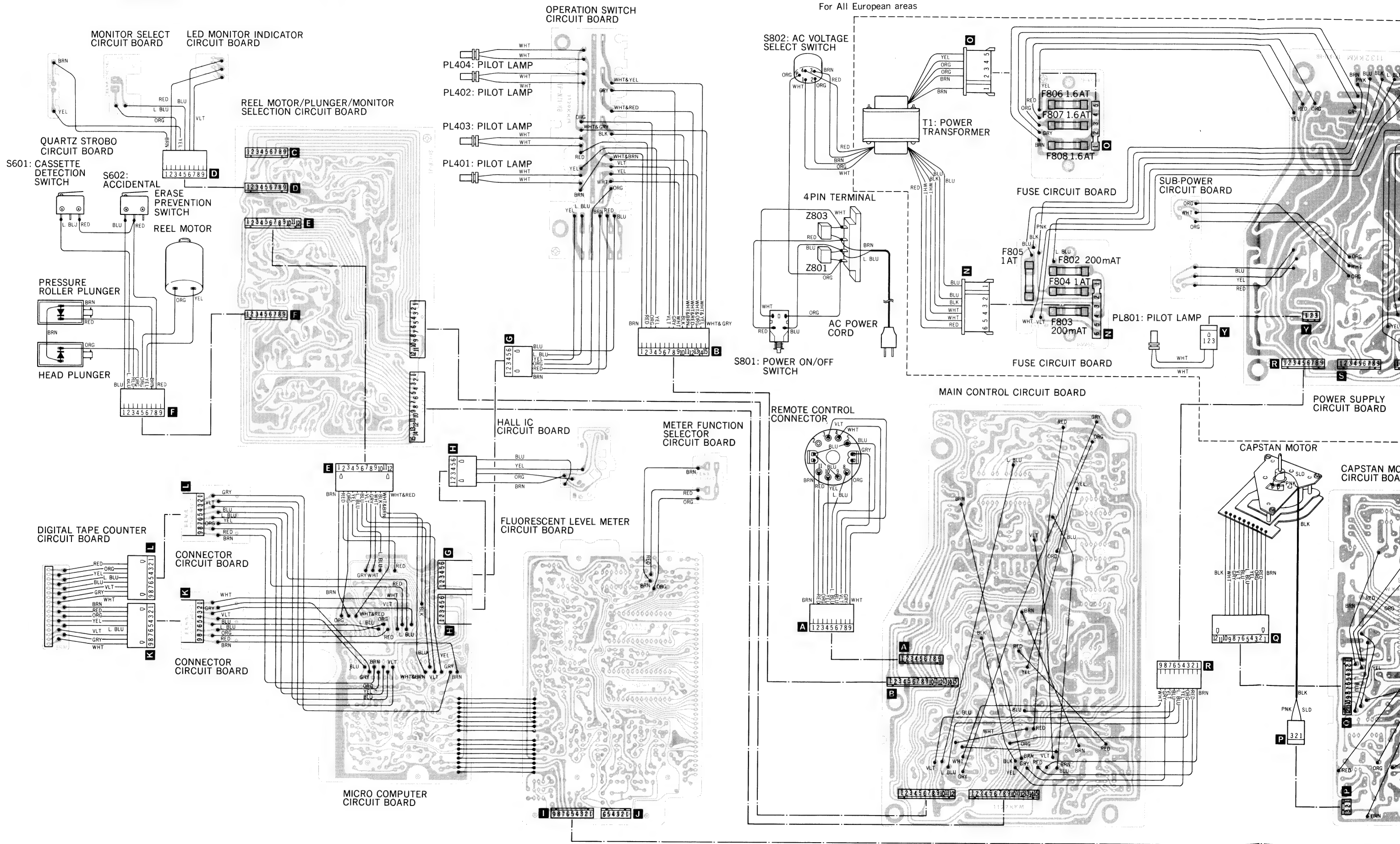
CABINET PARTS



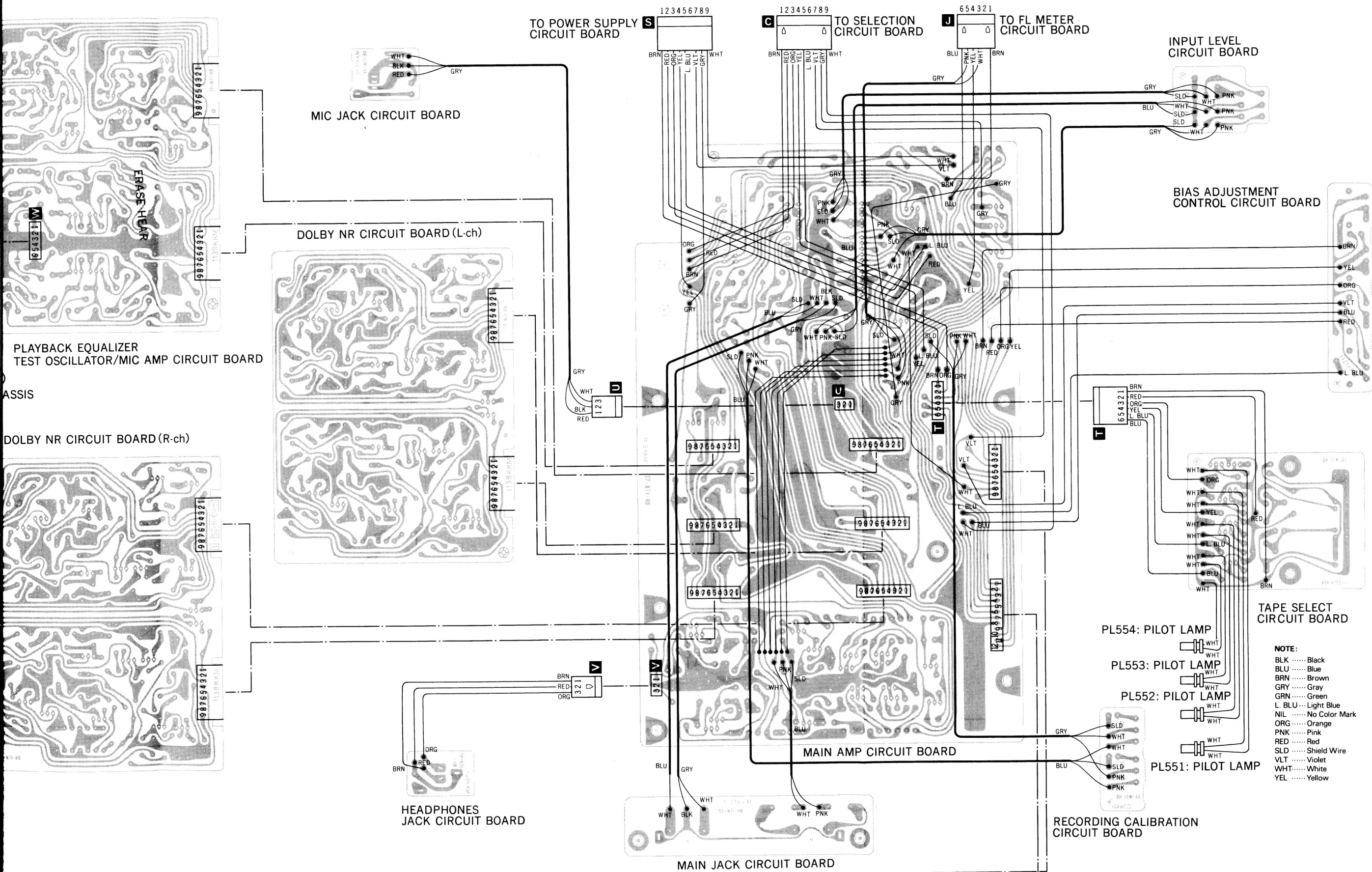
RS-M95



WIRING CONNECTION DIAGRAM
Controls Section



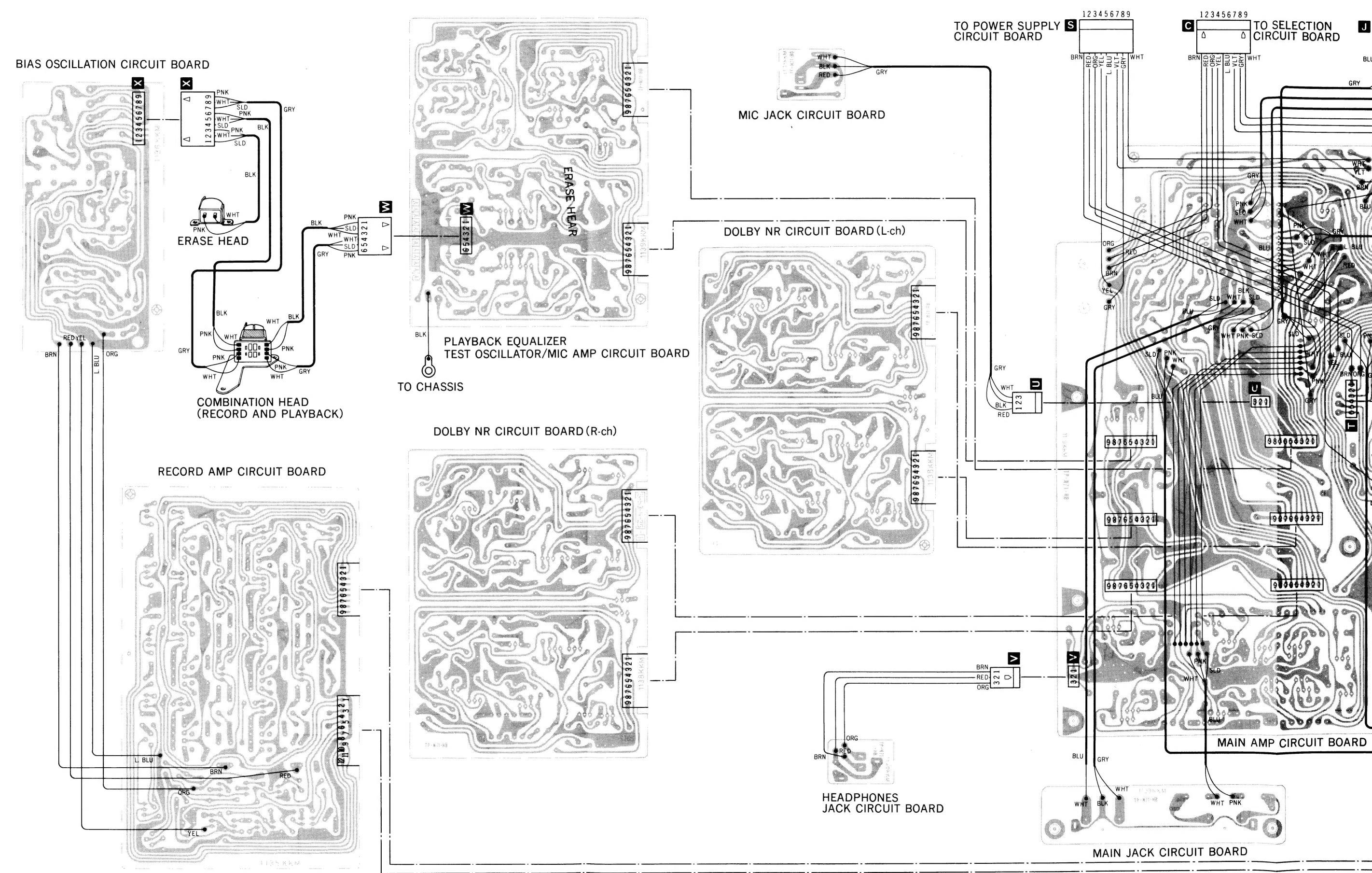
AM



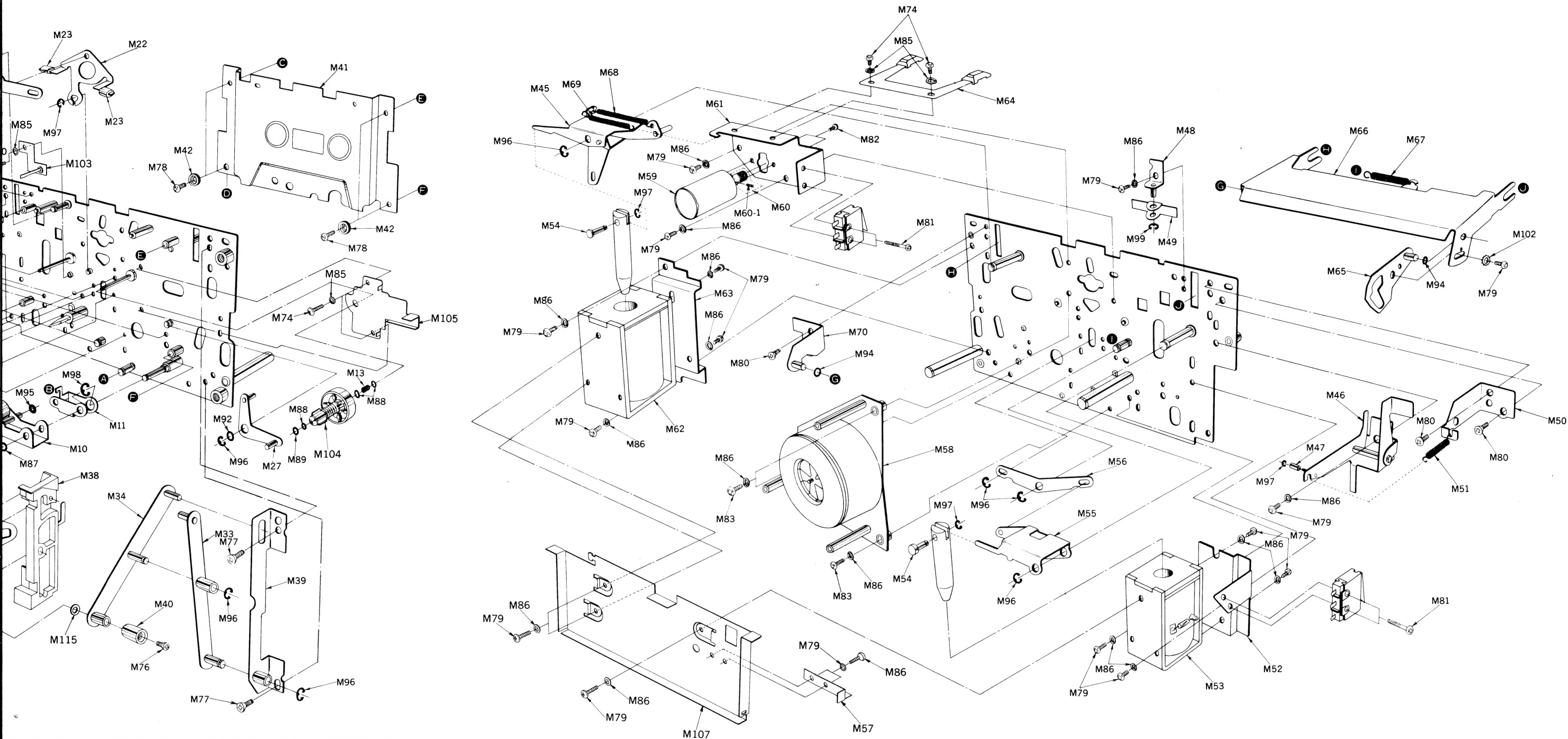
NOTE:
 BLKBlack
 BLUBlue
 BRNBrown
 GRYGray
 GRNGreen
 L. BLULight Blue
 NILNo Color Mark
 ORGOrange
 PNKPink
 REDRed
 SLDShield Wire
 VLTViolet
 WHTWhite
 YELYellow

WIRING CONNECTION DIAGRAM

Amp Section

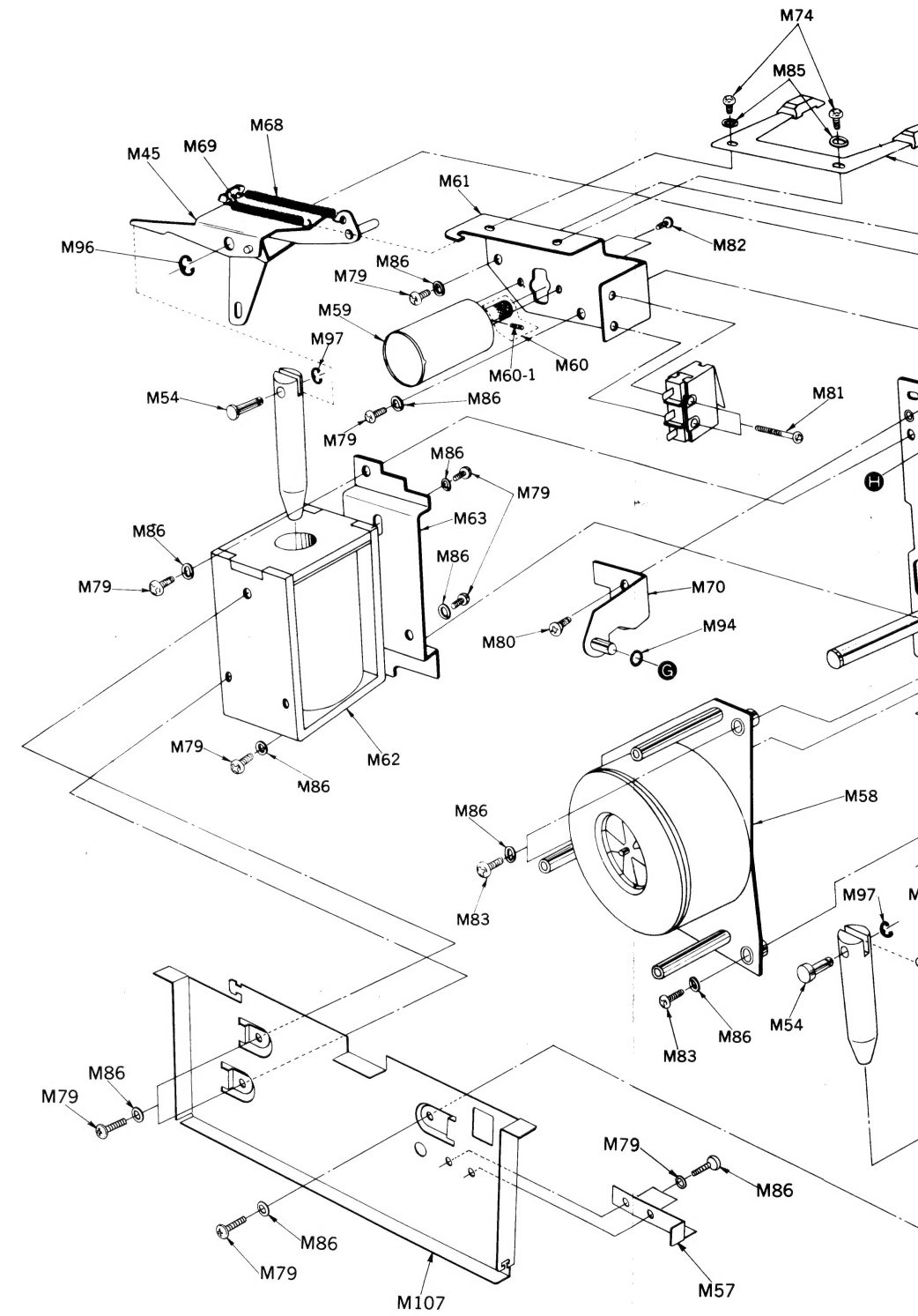
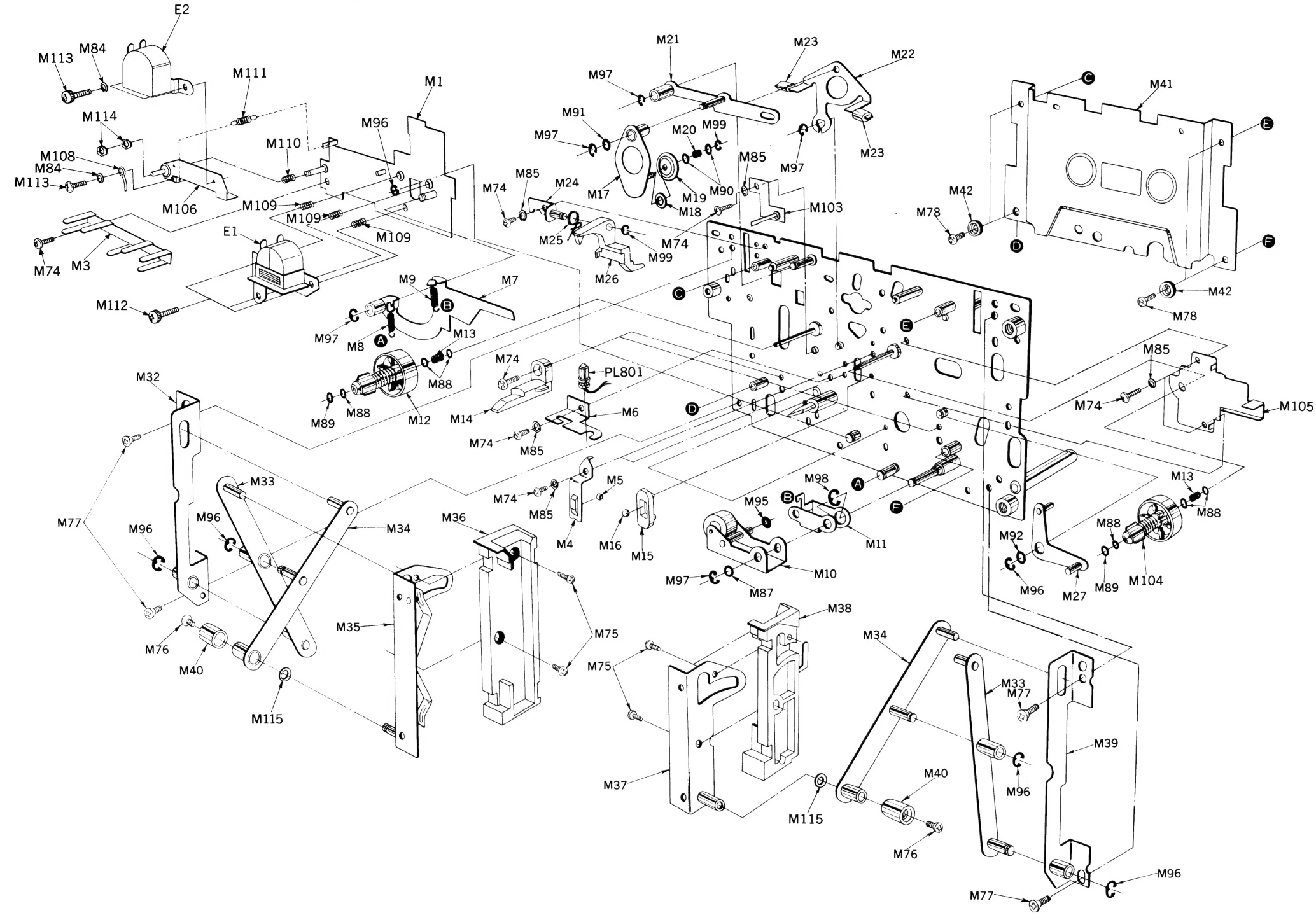


RS-M95



Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	
Idler Lever Assembly	M37	QXA0705	Holder Angle-R Assembly	M53	QME0141	Plunger	M68	QBT1405	Lever Spring	M88	QBW2012	"	M104	QXD0101	Takeup Reel Table Assembly	
Idler Felt	M38	QMH2028	Cassette Holder-R	M54	QMN2095	Plunger Pin	M69	QBT1713	Record Spring				M105	QTD1271	Hall IC Holding Plate	
Idler Assembly	M39	QXA0704	Angle-R Assembly	M55	QXL1171	Plunger Lever-L Assembly	M70	QXA0702	Connector Angle-R Assembly	M89	QBW2008	"	M106	QML1276	Erase Head Lever	
Idler Spring	M40	QKJ0245	Spacer-A	M56	QML3276	Plunger Lever	M74	XS26+4	Screw $\varnothing 2.6 \times 4$	M90	QBW2015	"	M107	QMA3642	Circuit Board Angle	
Brake Lever Assembly	M41	QKH0286	Mechanism Cover				M75	XS26+4BVS	"	M91	QBW2017	"	M108	QTD1163	Rug Plate	
		*For All European areas except United Kingdom.												M109	QBC1235	Head Spring
Brake		QKH0277B	"	M57	QMA3681	Reinforcement Angle	M76	XS52+4	Screw $\varnothing 2 \times 4$	M92	QBW2018	"				
Stopper Rubber		*For United Kingdom and Australia.														
Detection Angle Assembly	M42	QMZ1213	Spacer-B	M58	QXK2010	Capstan Motor Assembly	M77	XS53+4S	Screw $\varnothing 3 \times 4$	M94	QBW2019	Poly Washer	M110	QBC1221	"	
Detection Lever Spring	M43	QBP1135	Spring Washer	M59	MKCN22AE5	Reel Motor	M78	QH01185	Step Screw	M95	QBK7123	Fiber Washer	M111	QBT1619	Idler Spring	
Detection Lever	M45	QXL1165	Lever-B Assembly	M60	QXP0574	Motor Pulley Assembly				M96	XUC3FT	Stop Ring 3 ϕ	M112	XS52+10	Screw $\varnothing 2 \times 10$	
Lever-A Assembly	M46	QXL1188	Eject Lever Assembly	M60-1	XXE26D3FZ	Set Screw	M79	XS26+4	Screw $\varnothing 3 \times 5$	M97	XUC25FT	Stop Ring 2.5 ϕ	M113	XS26+4	Screw $\varnothing 2 \times 4$	
Angle-L Assembly				M61	QMA3313	Motor Angle	M80	XS53+6S	Screw $\varnothing 3 \times 6$	M98	XUC5FT	Stop Ring 5 ϕ	M114	XNF26AF	Nut	
Link Lever-A Assembly	M47	QDP1758	Roller	M62	QXE0243	Plunger	M81	QH01182	Step Screw	M99	XUC2FT	Stop Ring 2 ϕ	M115	QBK7005	Washer	
Link Lever-B Assembly	M48	QXA0713	Angle Assembly	M63	QMA3312	Plunger Angle-R	M82	XS26+3	Screw $\varnothing 2 \times 3$							
Holder Angle-L Assembly	M49	QML3284	Release Lever	M64	QKH0276	Cassette Holding Cushion	M83	XS26+8S	Screw $\varnothing 3 \times 8$							
	M50	QMA3314	Connector Angle	M65	QXL1173	Lock Lever Assembly	M84	XWA2	Spring Washer 2 ϕ	M100	XS26+6	Screw $\varnothing 2.6 \times 6$				
	M51	QBT1753	Playback Lever Spring				M85	XWA26	Spring Washer 2.6 ϕ	M101	XWG26	Flat Washer				
	M52	QMA3311	Plunger Angle-L	M66	QML3282	Connector Lever	M86	XWA3	Spring Washer 3 ϕ	M102	XWC3	Lock Washer				
Cassette Holder-L				M67	QBT1553	Holder Spring-R	M87	QBW2016	Poly Washer	M103	QXH0308	Back Tension Plate				

EXPLODED VIEWS



Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS																				
M1	QXK2152	Head Base Plate Assembly	M17	QXL1189	Idler Lever Assembly	M37	QXA0705	Holder Angle-R Assembly	M53	QME0141	Plunger	M68	QBT1405	Lever Spring	M88	QBW2012	"	M104	QXD010	"
M3	QTD1270	Head Wires Clamper	M18	QBF1260	Idler Felt	M38	QMH2028	Cassette Holder-R	M54	QMN2095	Plunger Pin	M69	QBT1713	Record Spring	M89	QBW2008	"	M105	QTD127	"
M4	QBP1733	Steel Ball Holder-A	M19	QX10101	Idler Assembly	M39	QXA0704	Angle-R Assembly	M55	QXL1171	Plunger Lever-L Assembly	M70	QXA0702	Connector Angle-R Assembly	M90	QBW2015	"	M106	QML127	"
M5	QDK1012	Steel Ball 2.5φ	M20	QBC1308	Idler Spring	M40	QXJ0245	Spacer-A	M56	QML3276	Plunger Lever	M74	XSN26+4	Screw +2.6×4	M91	QBW2017	"	M107	QMA364	"
M6	QMA3321	Lamp Angle	M21	QXL1164	Brake Lever Assembly	M41	QXH0286	Mechanism Cover	*For All European areas except United Kingdom.		M57	QMA3681	Reinforcement Angle	M75	XSN26+4BVS	"	M108	QTD116	"	
M7	QXL1168	Pressure Roller Lever Assembly	M22	QML3273	Brake	*For United Kingdom and Australia.		M42	QXZ0277B	"	M58	QXK2010	Capstan Motor Assembly	M76	XSS2+4	Screw +2×4	M109	QBC123	"	
M8	QBT1490	Eject Lever Spring	M23	QBG1132	Stopper Rubber	M43	QZM1213	Spacer-B	M59	MKCN22AE5	Reel Motor	M77	XSS3+4S	Screw +3×4	M94	QBW2019	Poly Washer	M110	QBC122	"
M9	QBT1441	Pressure Roller Spring	M24	QXA0714	Detection Angle Assembly	M44	QBP1135	Spring Washer	M60	QXP0574	Motor Pulley Assembly	M78	QHQ1185	Step Screw	M95	QBK7123	Fiber Washer	M111	QBT161	"
M10	QXL1166	Pressure Roller Assembly	M25	QBN1573	Detection Lever Spring	M45	QML1165	Lever-B Assembly	M60-1	XXE26D3FZ	Set Screw	M79	XSN3+5S	Screw +3×5	M96	XUC3FT	Stop Ring 3φ	M112	XSS2+1	"
M11	QML3267	Pressure Roller Lever-1	M26	QML3285	Detection Lever	M46	QXL1188	Eject Lever Assembly	M61	QQA3313	Motor Angle	M80	XSS3+6S	Screw +3×6	M97	XUC25FT	Stop Ring 2.5φ	M113	XSN2+4	"
			M27	QXL1172	Lever-A Assembly	M47	QXE0243	Plunger	M62	QQA3312	Plunger	M81	QHQ1182	Step Screw	M98	XUC5FT	Stop Ring 5φ	M114	XNF26A	"
M12	QXD0087	Reel Table	M32	QXA0703	Angle-L Assembly	M48	QDP1758	Roller	M63	QQA3312	Plunger Angle-R	M82	XSN2+3	Screw +2×3	M99	XUC2FT	Stop Ring 2φ	M115	QBK700	"
M13	QBC1272	Back Tension Spring	M33	QXL1191	Link Lever-A Assembly	M49	QXA0713	Angle Assembly	M64	QXH0276	Cassette Holding Cushion	M83	XSN3+8S	Screw +3×8	M100	XSN26+6	Screw +2.6×6			
M14	QMG0054	Cassette Guide	M34	QXL1190	Link Lever-B Assembly	M50	QML3284	Release Lever	M65	QXL1173	Lock Lever Assembly	M84	XWA26	Spring Washer 2φ	M101	XWG26	Flat Washer			
M15	QMH2009	Steel Ball Holder-B	M35	QXA0706	Holder Angle-L Assembly	M51	QMA3314	Connector Angle	M66	QBT1753	Playback Lever Spring	M85	XWA3	Spring Washer 2.6φ	M102	XWC3	Lock Washer			
M16	QDK1006	Steel Ball 3φ	M36	QMH2027	Cassette Holder-L	M52	QBT1753	Plunger Angle-L	M67	QMA3311	Plunger Angle-L	M86	QML3282	Connector Lever	M103	QXW308	Back Tension Plate			
												M87	QBT1553	Holder Spring-R		QBW2016	Poly Washer			